

## KANEKTOK RIVER WEIR 2003



By

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## ABSTRACT

A resistance-board floating weir on Kanektok River was used to estimate escapement and provide a platform for the collection of age, sex and length data for chinook *Oncorhynchus tshawytscha*, sockeye *O. nerka*, coho *O. kisutch*, and chum salmon *O. keta*. The 2003 commercial salmon harvest was 14,444 chinook, 127,471 sockeye, 49,833 coho, and 27,868 chum salmon, for a total of 126,086 fish. All harvests were below their most recent 10-year averages. The weir was operational from June 24 until September 18. Passage at the weir was 8,231 chinook, 127,471 sockeye, 40,066 chum, and 72,448 coho salmon. The 2003 season was the second year chinook, sockeye, and chum salmon age class composition data were collected and the third year coho salmon data were collected. Age class composition of chinook, sockeye, chum, and coho salmon harvested in the District W-4 commercial fishery were within the usual ranges

KEY WORDS: Kanektok River, Kuskokwim Area, District W-4, chinook, sockeye, chum, coho, salmon Kanektok River, Dolly Varden, *Oncorhynchus tshawytscha*, *O. nerka*, *O. kisutch*, *O. keta*, rainbow trout, whitefish

## INTRODUCTION

### *Study Area*

The Kanektok River is located in Togiak National Wildlife Refuge in southwestern Alaska (Figure 1). The river originates at Kegati Lake and flows westerly for 91 mi (146 km) and empties into Kuskokwim Bay near the village of Quinhagak. The upper portion of the river is a single channel flowing primarily through mountainous area. The lower portion of the river flows through a broad fluvial plain and is braided with many side channels. The Kanektok River and its many tributaries drain approximately 500 mi<sup>2</sup> of surface area dominated by largely undisturbed tundra. The surrounding riparian vegetation is composed primarily of cottonwood, willow, and alder. The weir is located at river mile 42 (67.60 km), GPS coordinates N 59 46.057, W 161 03.616 (Figure 1).

### *Salmon Fisheries*

District W-4 was established in 1960 by the Alaska Department of Fish and Game (ADF&G). The boundaries of District W-4 extend from the northern-most edge of the mouth of Oyak Creek to the southern-most tip of the south mouth of the Arolik River, and expand 3 mi from the coast into Kuskokwim Bay (Figure 2). The current boundaries are the same as when the district was established in 1960. In 1990, the northern boundary was moved northward to the northern most edge of Weelung Creek in response to an increase in the number of permit holders participating in the district. The increase in number resulted in overcrowding of fishermen in the district during commercial openings. In 1997, the northern boundary was returned to its original position (Oyak Creek) by emergency order. This was an attempt to minimize the inception of Kuskokwim River chum salmon in the District 4 commercial fishery. The emergency order was in effect from July 14 through July 28. As a concession, the department extended the southern boundary south by three miles. After July 28, the boundaries reverted back to their original positions. In 2000, the Alaska Board of Fisheries permanently moved the northern boundary to its original position at Oyak Creek. This was an effort to minimize the inception of Kuskokwim River chinook and chum salmon.

The Kanektok and Arolik Rivers are the main spawning streams in the district. The fishery is directed towards chinook salmon *Oncorhynchus tshawytscha*, sockeye salmon *O. nerka*, and coho salmon *O. kisutch*. Chum salmon, *O. keta*, are harvested incidentally. Pink salmon *O. gorbuscha*, are the least valuable species commercially and not targeted.

In the Kuskokwim Area, permit holders have unrestricted movement between commercial fishing districts. Historically, permit holders from Quinhagak, Goodnews Bay, lower Kuskokwim River villages, and upper Kuskokwim Bay villages participate in the District W-4 commercial fishery. However, in recent years, permit holders fishing the district have primarily been from the Quinhagak area. Most permits fish the chinook and sockeye salmon directed



fisheries. Commercial fishing in the district is conducted with drift gillnets in the tidal channels radiating into the bay from surrounding freshwater streams, and with gillnets set near the mouth of the Kanektok River.

Commercial salmon harvests in District 4 have ranged from 4,186 salmon in 1966 to 302,130 salmon in 1992 (Table 1). The historical average is 117,059 fish, the most recent 10-year average (1993-2002) is 177,454 fish. The District 4 commercial fishery has been in a steady decline since 1997. From 1977 through 1996, commercial harvests averaged 166,500 fish. The number of permits fishing averaged 279 (Table 2). Since then, the average commercial harvest has dropped to 131,000 fish, while the average number of permits has dropped to 207. In 2001 and 2002, both the number of permit holders participating in the fishery and the total harvests were the lowest since the late seventies. In 2001 and 2002, 159 and 144 permits fished the district, over a 40 % decrease from the most recent 10-year average (1992-2001) of 277. The total harvests of 82,322 and 85,229 fish in 2001 and 2002 were more than a 50 % decrease from the most recent 10-year average (1992-2001) of 199,144. The decline in the fishery is likely attributable to the poor market value of salmon since 1995, increasing fuel prices, and other economic opportunity in the area.

Subsistence fishing for salmon occurs throughout the Kanektok River drainage. Subsistence caught salmon make an important contribution to the annual subsistence harvests of residents from Quinhagak, Goodnews, Eek, and Platinum (Burkey et. al. 2001). The Department has quantified subsistence harvests in the Quinhagak area since 1968. Over the last 10 years, annual subsistence harvests have averaged 3,363 chinook, 1,094 sockeye, 1,184 chum, and 2,064 coho salmon.

The Kanektok River supports an expanding sport fishery. Both guided and non-guided sport anglers from around the world fish the drainage from mid-June to the beginning of September targeting salmon, rainbow trout, and Dolly Varden. From 1983 through 2002, the sport harvest of chinook salmon ranged from 316 to 1,910 fish, sockeye harvests from 12 to 942 fish, chum salmon harvests from 43 to 777, and coho salmon harvests from 358 to 2,448 fish (Lafferty 2003).

### *Escapement Monitoring*

The Kanektok River is the primary spawning stream in District W-4. Establishing a viable method for assessing salmon escapement in the Kanektok River has been problematic since the inception of the District W-4 commercial fishery in 1960. The first attempt was a counting tower established in 1960 on the lower river near the village of Quinhagak (ADF&G 1960). The project was plagued by logistical problems, poor visibility into the water column, and difficulties with species apportionment (ADF&G 1960). In 1961, the tower was relocated to the outlet of Kegati Lake and operated through 1962 (ADF&G 1961, 1962). Although successful in providing sockeye salmon escapement information, it was abandoned after 1962 (ADF&G 1962). The next attempt was hydroacoustic sonar (1982 through 1987) but was deemed unfeasible because of budget constraints, technical obstacles, and site limitations (Schultz and Williams 1984,

Huttunen 1984, 1985, 1986, 1988). In 1996, a cooperative effort between the Native Village of Quinhagak (NVK), United States Fish and Wildlife Service (USFWS), and ADF&G, and USFWS Office of Subsistence Management (OSM) revisited the counting tower located 20 mi from the District W-4 commercial fishery. The counting tower again met with limited success (Fox 1997) despite improvements to the project in 1998 (Menard and Caole 1999). In 1999, resources were redirected towards developing a resistance board-floating weir (Burkey et al. 2001). The weir was briefly operational in 2000, but technical limitations, personnel problems, and high water levels precluded the project from meeting its objectives (Linderman 2000). Also, during operation in 2000, the site was determined incapable of facilitating a weir because of extensive bank erosion (Linderman 2000). In 2001, the weir was relocated approximately 20 mi upriver from the original site. The weir was successfully installed and operated albeit installation was delayed until August 10. In 2002, weir operation allowed the project to meet all of its objectives. In 2003, crews installed the weir during the last week in April when the river level is low before snowmelt and spring precipitation. The project continues as a cooperative venture between the ADF&G, USFWS, USFWS OSM, Bering Sea Fisherman's Association (BSFA), and NVK.

Escapement information for salmon stocks in the Kanektok River is scant (Table 3). The 2003 season was the third year of operation for the Kanektok weir. Three years of nearly complete coho salmon counts have been collected, two years of counts for chinook, sockeye, and chum salmon. Previous escapement information includes partial counts from a counting tower in 1996 and 1997.

### *Aerial Surveys*

Aerial surveys for chinook, sockeye, chum, and coho salmon in the Kanektok River drainage have been flown since 1962 (Table 4). Aerial survey escapement goals were established in 1993 and set respectively at 5,800, 15,000, 30,500, and 25,000 fish for chinook, sockeye, chum, and coho salmon (Buklis 1993). Chinook salmon have achieved their goal on eleven of the twenty-three surveys flown since 1962. Sockeye salmon have achieved their goal on fifteen of the twenty-three surveys flown since 1962. Chum salmon have met their goal on four of the twenty-two surveys flown since 1966. Aerial surveys for coho salmon have been sporadic. Poor weather conditions typical of the area during September limit the ability to fly coho salmon surveys.

### *Age, Sex, and Length*

Annual escapement age, sex, and length (ASL) composition information is used to develop stock-recruitment models, in turn providing information used for projecting future run sizes. Available escapement ASL information for chinook, sockeye, chum, and coho salmon is limited. Historical summaries of existing ASL information for salmon returning to the Kanektok River can be found in DuBois and Molyneaux (2001) and DuBois and Folletti (unpublished data). The summary for chinook, sockeye, chum, and coho salmon are based on information from the 1997 Kanektok River

counting tower project. Samples collected from the Kanektok River sonar project from 1984-87 (Huttunen 1984, 1985, 1986, 1988), from sport samples collected in 1991, 1993, and 1994 from a Kanektok River sport fishery creel survey conducted by ADF&G Sport Fish Division (Molyneaux and DuBois 2001), and from carcass sampling from 1992 through 1996 (MacDonald 1997), and carcass sampling from a survey trip in 1984 (Snellgrove and Bue 1984) are not included in these summaries.

Chinook salmon age and sex information has been collected from the District W-4 commercial harvest since 1990, and length information has been collected since 1995 (Dubois and Folletti unpublished). Since 1990, 62% of the chinook salmon commercially harvested have been male, and been comprised mostly (43%) of age-1.4 fish. Since 1995, the average seasonal mean lengths of age-1.4 fish have been 836 and 853 mm, males and females, respectively.

Sockeye salmon age and sex information has been collected from the District W-4 commercial fishery since 1990, and length information since 1995 (Dubois and Folletti unpublished). Since 1990, 51 % of the sockeye salmon commercially harvested have been male, and been comprised mostly (61 %) of age-1.3 fish. Since 1995, the average seasonal mean lengths of age-1.3 fish have been 584 mm for males and 551 mm for females.

Chum salmon ASL information has been collected from the District W-4 commercial harvest since 1984 (Dubois and Folletti unpublished). Over this period of time. chum salmon commercially harvested have been 55 % female, and comprised mostly (58%) of age-0.3 fish. The average mean seasonal lengths of age-0.3 fish have been 585 mm and 563 mm. males and females, respectively.

Coho salmon age and sex information has been collected from the District W-4 commercial harvest since 1990, and length information has been collected since 1996 (Dubois and Folletti unpublished). Since 1990, coho salmon commercially harvested have been 52 % male, and comprised mostly (87 %) of age-2.1 fish. Since 1996, the average mean seasonal lengths of age-2.1 fish have been 592 mm males and 595 mm females.

### *Objectives*

The annual objectives for the Kanektok River Weir are to:

- successfully install and operate the weir annually from mid-June through September,
- enumerate the daily passage of all fish species through the weir,
- describe run-timing or proportional daily passage of chinook, sockeye, chum, and coho salmon through the weir,
- collect samples from chinook, sockeye, chum, and coho salmon at the weir for age-sex-length (ASL) determination,
- enumerate carcasses of all fish species washed up on the weir,
- record daily climatological conditions at the weir site during operation.

## METHODS

### *Resistance Board Floating Weir*

Since 2001, a resistance board floating weir has been used to enumerate salmon escapement in the Kanektok River. Methods for the design, construction, and installation of the resistance board, floating weir largely follow those described in Tobin (1994). The approximately 250 ft (76.2 m) weir used at the Kanektok River site had three major parts: the resistance board panel section, the fixed picket section, and the substrate rail.

The 230 ft (70.1 m) resistance board panel section was constructed with both 3 ft (0.91 m) x 20 ft (6.1 m) and 4 ft (1.2 m) x 20 ft (6.1 m) floating resistance board panels made out of 18 PVC Schedule 40 pipes (1 in diameter) with 2 ft (.61 m) by 4 ft (1.2 m) resistance boards attached to the downstream edge. The resistance board panels were anchored to a substrate rail by two hooks attached to a cable running the length of the rail. The substrate rail was anchored to the stream bottom with metal stakes and duckbill anchors.

Approximately 14 ft (4.3 m) of fixed-picket weir was used on the north bank, and approximately 6 ft (1.8 m) was used on the south bank to attach the floating resistance board weir to the banks. The fixed-picket sections were made of wooden tripods (1 on the south bank, 3 on the north bank) with two horizontal metal beams attached spanning the distance of the tripod legs. The metal beams had holes placed in them to allow aluminum bar placement vertically across the front of the tripods, completing the fixed picket section.

Two passage chutes were installed on the weir, one approximately 100 ft (30.48 m) from the south bank, the other approximately 25 feet (7.62 m) from the north bank. A 10 ft (3 m) x 15 ft (4.6 m) live trap box used to collect fish for age-sex-length (ASL) sampling was installed directly upstream of the north bank passage chute. Gates were attached on both chutes to control fish passage. To allow boaters and rafters to cross the weir without difficulty, two 4 ft (1.22 m) resistance board panels were modified into a boat passage gate by bending downward the downriver end of the pickets. Hard rubber sheets were placed on top of the bent pickets. The boat gate was located near mid-weir.

### *Escapement Monitoring*

To determine salmon escapement past the weir, fish passage counts were made daily from June 24 through September 18. During counts, the passage chute gate was opened to pass fish through the weir. Crewmembers identified and enumerated fish as they moved through the chute. Passage counts occurred regularly throughout the day, typically for 1-2 hour periods, beginning in the

morning and continuing as late as light permitted. Substantial delays in fish passage occurred only at night or during ASL sampling.

### *Age, Sex, and Length*

Escapement sampling for ASL determination was conducted based on the pulse sampling design of Molyneaux and DuBois (1999). The sampling objective for chinook salmon escapement was 4-5 strata (pulses) of 210 fish each, distributed equally over the time period of run migration. Objectives for sockeye and chum salmon were a minimum of 6 pulses of 210 and 200 fish each, distributed equally over their runs. The objective for coho salmon was 3 pulses of 170 fish each, distributed equally over the run. Each pulse sample was used to estimate the ASL composition of the run at a given point of time during the run. A weighted mean, based on relative fish passage during each defined pulse as the weight, was used to estimate age composition of the total season passage.

To obtain salmon for escapement ASL sampling, a gate on the live trap was opened for a period to allow a sufficient number of salmon to enter. The live trap gate was closed and individual salmon were removed ~~from~~ the trap using a dip net. To sample salmon from the commercial harvest, fish were obtained from the processor. For both escapement and harvest ASL data collection, fish were measured for length (from the mid-eye to fork-of-tail). Escapement samples were sexed by examination of external characteristics. Harvest samples were sexed by making a small incision (approx. 1 in) anterior to the anus and then checking for the presence of eggs in the body cavity. For both escapement and commercial harvest samples, scales were removed (3 scales each from chinook, and coho salmon, one scale from sockeye and chum salmon) from the ~~left~~ side of the fish, approximately two rows above the lateral line in an area crossed by a diagonal from the posterior insertion of the dorsal fin to the anterior insertion of the ~~anal~~ fin (INPFC 1963, DuBois and Molyneaux 2001). After escapement sampling was complete, fish were released upriver of the weir. Scales were arranged on gum cards in the field and sent to the Bethel office for processing. Impressions from the gum cards were made on cellulose acetate cards with a heated hydraulic press (Clutter and Whitesel 1956). Ages of the salmon were determined by examining the scale impressions (Mosher 1968), and ages were recorded in European notation (Koo 1962).

### *Aerial Surveys*

An aerial survey for chinook, sockeye, and chum salmon was flown on August 2. The survey was conducted in a small fixed winged aircraft at an altitude of 500 ft. Conditions were classified as fair to good. An aerial survey for coho salmon was not flown because of poor weather conditions. Distribution of spawning chinook salmon was noted above and below the weir.

## RESULTS

### *Salmon Fisheries*

A total of 114 permits fished the district, 55 % below the most recent 10-year average of 253 (Table 2). Although the number of permits participating in the fishery in 2003 was below the most recent 10-year average, it did not drop from 2002. The below average number of permits participating in the fishery is likely the result of the continued poor market value of salmon, increasing fuel prices, and other economic opportunity in the area. There were 24 commercial fishing periods in 2002, 14 % below the most recent 10-year average of 28 (Table 2). The 288 hours of fishing time was 14 % below the most recent 10-year average of 334. The chinook salmon harvest of 14,444 fish was 28 % below the most recent 10-year average of 19,968 fish (Table 1). The sockeye salmon harvest of 33,941 fish was 38 % below the most recent 10-year average of 55,153 fish. The coho salmon harvest of 49,833 fish was 4 % below the most recent 10-year average of 51,963 fish. The chum salmon harvest of 27,868 fish was 40 % below the most recent 10-year average of 46,536 fish. The total commercial harvest of 126,086 fish was 29 % below the most recent 10-year average of 177,454 fish. The ex-vessel value of the District 4 commercial harvest was \$303,407, 44 % below the most recent 10-year average of \$542,217 (Table 5). The most valuable species was coho salmon providing 36% of the fishery's value, followed by sockeye salmon that comprised 35 % of the total value. Chinook salmon was third at 23 %. Chum salmon was the least valuable species, comprising 6 % of the total.

At the time of this writing, subsistence salmon harvests in 2003 for the Quinhagak area have not been determined. Anecdotal information indicates that subsistence salmon harvests were adequate, and were about the same as normal years. Estimated subsistence salmon harvests in 2002 were 2,475 chinook, 1,839 chum, 855 sockeye, and 1,099 coho salmon. Except for chum salmon, subsistence harvests were below most recent ten year averages.

### *Escapement Monitoring*

The Kanektok River weir was operational from June 24 through September 18. Salmon escapement at the weir was 8,231 chinook, 127,471 sockeye, 40,066 chum, 72,448 coho, and 2,443 pink salmon (Table 3). As a result of the location of the weir (approximately mile 40), it is likely a substantial number of chinook, chum, and coho salmon spawn below the weir. In addition, it is possible a number of chinook, sockeye, and chum salmon passed the weir site prior to the operation of the weir. Thus, escapement counts of chinook, sockeye, and chum salmon may not reflect the total number of spawners in the drainage. Daily and cumulative passage counts are listed for chinook, sockeye, chum, coho, and pink salmon, and for Dolly Varden in Tables 6 through 11.

### ***Age, Sex, and Length***

#### Escapement

*Chinook Salmon:* A total of 174 fish, collected over 3 pulses, were sampled for ASL determination (Tables 12 and 13). Overall, 67.3% of the fish sampled were male. Age 1.2 (23.6%), 1.4 (36.7%), and 1.3 (35.3%) fish made up the majority of the sample.

*Sockeye Salmon:* A total of 403 fish, collected over 4 pulses, were sampled for ASL determination (Tables 14 and 15). Overall, 49.4% of the fish sampled were male. Age 1.3 (69%) and 1.2 (26.6%) fish made up the majority of the sample

*Chum Salmon:* A total of 773 fish, collected over 4 pulses, were sampled for ASL determination (Tables 16 and 17). Overall, 50.4% of the fish sampled were male. Age 0.3 (86.8%) and 0.4 (10.4%) fish made up the majority of the sample

*Coho Salmon:* A total of 196 fish, collected over 3 pulses, were sampled for ASL determination (Tables 18 and 19). Overall, 52.6% of the fish sampled were female. Age 2.1 (83.2%) and 3.1 (14.7%) fish made up the majority of the sample

#### Commercial

*Chinook* A total of 547 fish, collected over 3 pulses, were sampled for ASL determination (Tables 20 and 21). Overall, 76.3% of the fish sampled were male. Age 1.3 (34.3%), 1.4 (32.6%), and 1.2 (27.6%) fish made up the majority of the sample

*Sockeye Salmon:* A total of 365 fish, collected over 4 pulses, were sampled for ASL determination (Tables 22 and 23). Overall, 54.3% of the fish sampled were male. Age 1.3 (66.2%) and 1.2 (26.5%) fish made up the majority of the sample

*Chum Salmon:* A total of 243 fish, collected over 3 pulses, were sampled for ASL determination (Tables 24 and 25). Overall, 52.1% of the fish sampled were female. Age 0.3 (88.0%) and 0.4 (9.7%) fish made up the majority of the sample

*Coho Salmon:* A total of 153 fish, collected over 3 pulses, were sampled for ASL determination (Tables 26 and 27). Overall, 67.7% of the fish sampled were male. Age 2.1 (82.9%) and 3.1 (10.1%) fish made up the majority of the sample

### ***Aerial Surveys***

A total of 5,430 chinook salmon, 18,010 sockeye salmon, and 2,700 chum salmon were observed during the aerial survey. Survey conditions were rated as good. A total of 3,120 chinook salmon were observed above the weir, 2,310 were observed below the weir. Most of the chinook salmon observed were centered above and below the weir, approximately 15 mi in each direction. A large amount of sockeye salmon observed in Kagati and Pegati Lakes were observed on the

fringe of the shallow and deep water areas. As a result, it is probable a substantial amount of sockeye salmon were in the deeper water and unobservable.

### ***Carcass Counts and Hydrological and Climatological Monitoring***

Daily and cumulative carcass counts for all species can be found in Table 28. Daily hydrological and climatological readings can be found in Table 29.

## **DISCUSSION**

The weir was installed during the last week in April, during winter base-flow, well in advance of increased water discharge caused by snowmelt and spring precipitation. After installation, the weir remained inoperative until June 24. NVK crews regularly monitored the weir during the time period between installation and operation. Between installation and operation, the resistance boards on the weir panels were rigged so the panels sat on the river substrate. In addition, the passage chutes were not installed, and approximately 30 ft of weir on the south bank was not installed. The passage chutes were not installed to prevent the build-up of debris on the chute opening. Excessive build-up of debris could put heavy loads on that section of the weir, causing structural damage. The 30 ft section of the weir was not installed to allow the passage of fish until the crew was on site. On June 15, the crew was deployed to the weir site the remaining components of the weir were installed. High water discharge hindered the remainder of the installation by about a week. Regardless, the June 24 operational start date was the earliest for the project. In future years, the passage chutes should be installed in April, and v-shaped deflector shields should be placed on the upriver chute opening to prevent the build-up of debris. This could allow crews to have the weir operational around mid-June.

Operation of the weir did allow for the nearly complete enumeration of chinook, sockeye, and chum salmon escapement, and Dolly Varden migration past the weir. This year marks the second year of nearly complete escapement counts for all salmon species (note in 1996 and 1997 the project operated as a counting tower and was in operation for a limited time), the third year for coho salmon. It is likely, as a result of the distance of the weir from the mouth of the Kanektok River, a substantial number of chinook, chum, and coho salmon spawn below the weir. During aerial surveys, observers have noted considerable chinook salmon spawning activity below the weir site. In 2004, the department and its cooperators will begin planning a three to five year in-river radio telemetry project to examine the number of chinook salmon spawning below the weir. The target date for initiation could be as early as 2005. If the project is successful, it may be expanded to examine chum and coho salmon. Information from this project should provide a better understanding of the spawning populations of salmon in the Kanektok River.

The weir serves as a platform for the collection of ASL information From the salmon escapement past the weir. Two years of chinook, sockeye, chum salmon, and three years of coho salmon



escapement ASL information have been collected. This information can be used to build spawner recruit tables, providing information needed to establish Biological Escapement Goals for the spawning salmon stocks in the Kanektok River. Salmon escapement goals at the weir could be established within the next three years.

The weir information is used in management of the Kanektok fishery similar to the methods in which the Kuskokwim River tributary weir information is used in management of the Kuskokwim River fishery. Run timing and catch rate information is compared to other years with similar run timing and catch rate information. If in those years with similar run timing and catch rate information escapements were greater than goals we can increase fishing time and if they are less than goals we can decrease fishing time. The distance between the fishery and the weir is such that real time information can not be applied inseason with run timing projections. Since there are few years of weir passage information, passage information has little effect on management actions. As time passes and we have more years of information the information will be of greater value on an inseason basis.

During the season most problems were solved with relatively minor adjustments. The trapping of sockeye salmon for ASL sampling proved to be difficult. Sockeye were reluctant to enter the trap once other fish were present inside the trap or when the doors on the trap were set (two rear doors of the trap held open only several inches that funneled fish in but leaving a small awkward opening preventing fish from swimming out). This problem was initially solved by physically "working" the trap, which was marginal in success and time consuming. The final solution was utilizing a beach seine to capture sockeye behind the weir. This technique was successful in allowing the crew to obtain complete ASL samples for sockeye. A high water event late in the season resulted in increased turbidity, making it difficult to identify fish during passage counts. Aluminum panels were placed across the bottom portion of the opening to the fish trap. This forced the fish to swim up and over the panel bringing fish closer to the surface allowing them to be seen. The increased depth and volume of the river created substantial flow over the top of the boat gates, potentially allowing fish to pass at that section. Boat gates consist of two modified panels having only three settings on the cable used to adjust the angle of the resistance boards. More studs on the cables would give greater range of adjustment allowing the boat gate panels to be set for varying river conditions.

## CONCLUSIONS

Since the inception of the resistance board floating weir in 2001 the project has:

1. demonstrated the ability to successfully install and operate a weir in the Kanektok River during the targeted timeframe,
2. demonstrated the ability to achieve its annual objectives,
3. provided escapements and run timing information for the spawning salmon stocks and Dolly Varden populations in the Kanektok River,
4. provided platform for the collection of ASL information from the salmon escapement and Dolly Varden migration past the weir.

## RECOMMENDATIONS

Establish long term funding for the project:

1. this would ensure the construction of a long term escapement, run timing, and ASL database needed to better understand the spawning populations in the Kanektok River weir,
2. a long term database would lead to the establishment of Biological Escapement Goal for the spawning salmon populations, improving the management of the spawning stocks for sustainable yields.

Implement an in river chinook salmon radio telemetry study:

1. could help determine the number of chinook salmon spawning below the Kanektok weir,
2. could determine spawning distribution of chinook salmon in the Kanektok River,
3. allow a more accurate assessment of chinook salmon escapement in the Kanektok River,
4. could be expanded in the future to examine the number chum and coho salmon spawning below the weir, and their spawning distribution.

Compare and contrast annual aerial survey data:

1. could evaluate if a consistent percent of chinook salmon are observed below the weir,
2. an average percent of chinook salmon below the weir could be used to expand weir counts to total drainage escapement in the absence of a radio telemetry project,
3. compare and contrast distribution of chinook salmon observed from aerial surveys with radio telemetry results.

Continue the cooperative effort with NVK and USFWS:

1. *ADFBG* continues its proactive role in the mentoring of NVK technicians, the development of the project, and the oversight of seasonal operation. Regular consultations between *ADF&G* and NVK occurred throughout the field season, coordinating logistics, discussing results, and exchanging ideas. NVK provided three technicians for the 2003 season. USFWS used the weir as a platform for a Dolly Varden radio telemetry study in an attempt to better understand their spawning populations in the Kanektok River. The project can be used in future years as a platform for the study of other anadromous and resident freshwater species in the Kanektok River.

Continue weir installation in mid-late April:

1. installation of the weir should continue to occur in April to ensure the weir is operation by mid to early June,

2. high water level and discharge inherent to the Kanektok River in May and June substantially delayed installation of the weir in 2001 and 2002,
3. in 2003 the weir was installed late April, during winter base flow, and became operational June 24, the earliest start date for operation,
4. crews in future years should install the passage chute with a debris-deflecting structure in an attempt to have the weir operational by mid-June.

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Table 1. Commercial salmon harvests, District 4, 1960-2003,

Year	chinook	sockeye	coho	pink	chum	total
1960	0	5,649	3,000	0	0	8,649
1961	4,328	2,308	46	90	18,864	25,636
1962	5,526	10,313	0	4,340	45,707	65,886
1963	6,555	0	0	0	0	6,555
1964	4,081	13,422	379	939	707	19,528
1965	2,976	1,886	0	0	4,242	9,104
1966	278	1,030	0	268	2,610	4,186
1967	0	652	1926	0	8,087	10,665
1968	8,879	5,884	21,511	75,818	19,497	131,589
1969	16,802	3,784	15,077	953	38,206	74,822
1970	18,269	5,393	16,850	15,195	46,556	102,263
1971	4,185	3,118	2,982	13	30,208	40,506
1972	15,880	3,286	376	1,878	17,247	38,667
1973	14,993	2,783	16,515	277	19,680	54,248
1974	8,704	19,510	10,979	43,642	15,298	98,133
1975	3,928	8,584	10,742	486	35,233	58,973
1976	14,110	6,090	13,777	31,412	43,659	109,048
1977	19,090	5,519	9,028	202	43,707	77,546
1978	12,335	7,589	20,114	47,033	24,798	111,869
1979	11,144	18,828	47,525	295	25,995	103,787
1980	10,387	13,221	62,610	21,671	65,984	173,873
1981	24,524	17,292	47,551	160	53,334	142,861
1982	22,106	25,685	73,652	11,838	34,346	167,627
1983	46,385	10,263	32,442	168	23,090	112,348
1984	33,663	17,255	132,151	16,249	50,422	249,740
1985	30,401	7,876	29,992	28	20,418	88,715
1986	22,835	21,484	57,544	8,700	29,700	140,263
1987	26,022	6,489	50,070	66	8,557	91,204
1988	13,883	21,556	68,605	21,310	29,220	154,574
1989	20,820	20,582	44,607	273	39,395	125,677
1990	27,644	83,681	26,926	12,056	47,717	198,024
1991	9,480	53,657	42,571	115	54,493	160,316
1992	17,197	60,929	86,404	64,217	73,383	302,130
1993	15,784	80,934	55,817	7	40,943	193,485
1994	8,564	72,314	83,912	35,904	61,301	261,995
1995	38,584	68,194	66,203	186	81,462	254,629
1996	14,165	57,665	118,718	20	83,005 <sup>a</sup>	273,573
1997	35,510	69,562	32,862	5	38,445	176,384
1998	23,158	41,382	80,183	2,217	45,095	192,035
1999	18,426	41,315	6,184	0	38,091	104,016
2000	21,229	68,557	30,529	3	30,553	150,871
2001	12,775	33,807	18,531	0	17,209	82,322
2002	11,480	17,802	26,695	0	29,252	85,229
2003	14,444	33,941	49,833	0	27,868	126,086
<b>ten year average (93-02)</b>	19,968	55,153	51,963	3,834 <sup>h</sup>	46,536	177,454
<b>historical average</b>	15,746	24,119	34,083	18,850 <sup>b</sup>	33,389	117,059

<sup>a</sup> Estimate of chum roe included<sup>b</sup> Even years only

Table 2. Number of periods, hours, and permits fished, District 4  
1970-2003.

year	number of periods	fishing hours	permits fished <sup>a</sup>
1970	14	1,494	88
1971	6	630	61
1972	16	192	107
1973	28	504	109
1974	30	360	196
1975	24	288	127
1976	27	324	181
1977	27	324	258
1978	37	444	200
1979	36	432	206
1980	36	432	169
1981	33	396	186
1982	34	408	177
1983	28	318	226
1984	33	396	263
1985	23	276	300
1986	29	348	324
1987	19	216	310
1988	32	384	288
1989	29	348	227
1990	30	444	390
1991	31	372	346
1992	34	420	349
1993	32	384	409
1994	32	384	308
1995	35	414	382
1996	27	298	218
1997	31	372	289
1998	34	408	203
1999	19	228	218
2000	27	324	230
2001	20	231	159
2002	24	294	114
2003	24	288	114
<b>ten year average (93-</b>	<b>28</b>	<b>334</b>	<b>253</b>
<b>historical average</b>	<b>28</b>	<b>397</b>	<b>231</b>

<sup>a</sup> Permits that made at least one delivery during the year.

Table 3. Historic escapement, Kanektok River escapement project, 1996-2003.

Year	Dates of Operation	Chinook	Sockeye	Chum	Coho	Pink <sup>a</sup>
1996	July 2-13; 20-25	6,827 <sup>b</sup>	71,637 <sup>b</sup>	70,617 <sup>b</sup>		
1997	June 11- Aug. 21	16,731	96,348	51,180	23,172 <sup>b</sup>	7,872 <sup>b</sup>
1998	July 23- Aug.17	<sup>b</sup>	<sup>b</sup>	<sup>b</sup>	<sup>h</sup>	<sup>h</sup>
1999	Not operational					
2000	Not operational					
2001 <sup>c</sup>	Aug. 10-Oct 3	132 <sup>b</sup>	739 <sup>b</sup>	1,056 <sup>b</sup>	35,650	19 <sup>b</sup>
2002		5,343	58,367	42,014	24,883	87,036
2003		8,221	127,471	40,071	72,448	2,443

<sup>a</sup> Pink can pass freely through the Kanektok River weir.

<sup>b</sup> No counts or incomplete counts as project was not operated during significant portion of species migration.

<sup>c</sup> Project was operated as a resistance board, floating weir.



Table 4. Aerial survey estimates by species, Kanektok River drainage, 1962-2003a

year	chinook	sockeye	coho	chum
1962	935	43,108	b	b
1963	b	b	b	b
1964	b	b	b	b
1965	b	b	b	b
1966	3,718	b	b	28,800
1967	b	b	b	b
1968	4,170	8,000	b	14,000
1969	b	b	b	b
1970	3,112	11,375	b	b
1971	b	b	b	b
1972	b	b	b	b
1973	814	b	b	b
1974	b	b	b	b
1975	b	6,018	b	b
1976	b	22,936	b	8,697
1977	5,787	7,244	b	32,157
1978	19,180	44,215	b	229,290 c
1979	b	b	b	b
1980	b	b	b	b
1981	b	b	69,325	b
1982	15,900	49,175	b	71,840
1983	8,142	55,940	b	b
1984	8,890	2,340	b	9,360
1985	12,182	30,840	46,830	53,060
1986	13,465	16,270	b	14,385
1987	3,643	14,940	b	16,790
1988	4,223	51,753	20,056	9,420
1989	11,180	30,440	b	20,583
1990	7,914	14,735	b	6,270
1991	b	b	b	2,475
1992	2,100	44,436	4,330	19,052 d
1993	3,856	14,955	b	25,675
1994	4,670	23,128	b	1,285
1995	7,386	30,090	b	10,000
1996	b	b	b	b
1997	b	b	b	b
1998	6,107	22,020	23,656	7,040
1999	b	b	5,192	b
2000	1,118	11,670	10,120	10,000
2001	6,483	38,610	b	11,440
2002	b	b	b	b
2003	5,430	18,010	b	2,700
<b>GOAL</b>	<b>5,800</b>	<b>15,000</b>	<b>25,000</b>	<b>30,500</b>

a Aerial surveys are those rated as fair to good, obtained between 20 July and 5 August for chinook and sockeye salmon, 20-31 July for chum salmon, and 20 August and 5 September for coho salmon.

b Survey either not flown or did not meet acceptable survey criteria.

c Chum salmon count excluded from escapement objective calculation due to exceptional magnitude.

d Some chum may have been sockeye.

Table 5. Exvessel value of the District 4 commercial salmon harvest, 1990-2003.

year	chinook	sockeye	coho	pink	chum	total
1990	251,304	544,008	123,815	4,179	90,941	1,014,238
1991	95,800	247,117	144,455	36	107,228	594,636
1992	165,310	368,598	303,371	15,086	137,356	989,721
1993	142,918	402,910	245,982	4	104,347	896,161
1994	66,918	256,091	423,612	10,237	84,351	841,209
1995	417,029	322,113	202,834	83	106,041	1,048,099
1996	61,296	165,318	245,662	6	61,323	533,604
1997	168,913	206,562	92,396	1	30,769	498,661
1998	81,566	150,261	198,041	850	35,254	465,972
1999	93,886	141,492	14,800	0	28,116	278,894
2000	131,001	249,473	61,763	1	23,929	466,167
2001	92,423	11,832	88,957	0	32,577	225,789
2002	56,316	40,325	47,653	0	23,321	167,615
2003	68,729	106,613	108,805	0	19,260	303,407
10-year avg (1993-2002)	\$131,229	\$194,638	\$162,170	\$1,118a	\$53,003	\$542,217

a even years only

Table 6. Historic chinook salmon passage, Kanektok River, 2001-2003.

date	daily counts			cumulative counts			cumulative proportion		
	2001	2002	2003	2001	2002	2003	2001	2002	2003
22-Jun									
23-Jun									
24-Jun			1			1			0.00
25-Jun			2			3			0.00
26-Jun			6			9			0.00
27-Jun			9			18			0.00
28-Jun			7			25			0.00
29-Jun			10			35			0.00
30-Jun			42			77			0.01
1-Jul		35	27		35	104		0.01	0.01
2-Jul		47	101		82	205		0.02	0.03
3-Jul		25	76		107	281		0.02	0.04
4-Jul		90	146		197	427		0.04	0.05
5-Jul		192	167		389	594		0.07	0.07
6-Jul		90	145		479	739		0.09	0.09
7-Jul		113	61		592	800		0.11	0.10
8-Jul		159	158		751	958		0.14	0.12
9-Jul		60	193		811	1,151		0.15	0.14
10-Jul		233	262		1,044	1,413		0.20	0.17
11-Jul		223	132		1,267	1,545		0.24	0.19
12-Jul		162	172		1,429	1,717		0.27	0.21
13-Jul		263	190		1,692	1,907		0.32	0.23
14-Jul		150	272		1,842	2,179		0.34	0.27
15-Jul		276	392		2,118	2,571		0.40	0.31
16-Jul		107	370		2,225	2,941		0.42	0.36
17-Jul		359	302		2,584	3,243		0.48	0.40
18-Jul		350	275		2,934	3,518		0.55	0.41
19-Jul		206	255		3,140	3,773		0.59	0.46
20-Jul		300	425		3,440	4,198		0.64	0.51
21-Jul		103	632		3,543	4,830		0.66	0.59
22-Jul		280	271		3,823	5,101		0.72	0.62
23-Jul		194	393		4,017	5,494		0.75	0.67
24-Jul		201	269		4,218	5,763		0.79	0.70
25-Jul		80	225		4,298	5,988		0.80	0.73
26-Jul		118	312		4,416	6,300		0.83	0.77
27-Jul		75	127		4,491	6,427		0.84	0.78
28-Jul		116	274		4,607	6,701		0.86	0.82
29-Jul		91	200		4,698	6,901		0.88	0.84
30-Jul		76	143		4,774	7,044		0.89	0.86
31-Jul		87	133		4,861	7,177		0.91	0.87
1-Aug		103	157		4,964	7,334		0.93	0.89
2-Aug		30	122		4,994	7,456		0.93	0.91

continued

Table 6. Continued (page 2 of 3)

date	daily counts			cumulative counts			cumulative proportion		
	2001	2002	2003	2001	2002	2003	2001	2002	2003
3-Aug		72	49		5,066	7,505		0.95	0.91
4-Aug		58	55		5,124	7,560		0.96	0.92
5-Aug		28	121		5,152	7,681		0.96	0.93
6-Aug		25	111		5,177	7,792		0.97	0.95
7-Aug		18	72		5,195	7,864		0.97	0.96
8-Aug		26	55		5,221	7,919		0.98	0.96
9-Aug		17	57		5,238	7,976		0.98	0.97
10-Aug	11	10	61	11	5,248	8,037	0.08	0.98	0.98
11-Aug	11	9	23	22	5,257	8,060	0.17	0.98	0.98
12-Aug	15	2	36	37	5,259	8,096	0.28	0.98	0.98
13-Aug	25	17	27	62	5,276	8,123	0.47	0.99	0.99
14-Aug	14	7	13	76	5,283	8,136	0.58	0.99	0.99
15-Aug	5	4	7	81	5,287	8,143	0.61	0.99	0.99
16-Aug	9	8	9	90	5,295	8,152	0.68	0.99	0.99
17-Aug	4	11	7	94	5,306	8,159	0.71	0.99	0.99
18-Aug	3	6	3	97	5,312	8,162	0.73	0.99	0.99
19-Aug	3	6	3	100	5,318	8,165	0.76	1.00	0.99
20-Aug	14	7	3	114	5,325	8,168	0.86	1.00	0.99
21-Aug	3	3	4	117	5,328	8,172	0.89	1.00	0.99
22-Aug	2	4	4	119	5,332	8,176	0.90	1.00	0.99
23-Aug	0	3	6	119	5,335	8,182	0.90	1.00	1.00
24-Aug	2	1	8	121	5,336	8,190	0.92	1.00	1.00
25-Aug	2	1	4	123	5,337	8,194	0.93	1.00	1.00
26-Aug	3	0	2	126	5,337	8,196	0.95	1.00	1.00
27-Aug	1	0	2	127	5,337	8,198	0.96	1.00	1.00
28-Aug	2	1	5	129	5,338	8,203	0.98	1.00	1.00
29-Aug	1	0	4	130	5,338	8,207	0.98	1.00	1.00
30-Aug	0	2	0	130	5,340	8,207	0.98	1.00	1.00
31-Aug	0	0	2	130	5,340	8,209	0.98	1.00	1.00
1-Sep	0	2	4	130	5,342	8,213	0.98	1.00	1.00
2-Sep	0	0	0	130	5,342	8,213	0.98	1.00	1.00
3-Sep	0	0	0	130	5,342	8,213	0.98	1.00	1.00
4-Sep	0	1	1	130	5,343	8,214	0.98	1.00	1.00
5-Sep	0	0	1	130	5,343	8,215	0.98	1.00	1.00
6-Sep	0	0	1	130	5,343	8,216	0.98	1.00	1.00
7-Sep	0	0	1	130	5,343	8,217	0.98	1.00	1.00
8-Sep	0	0	0	130	5,343	8,217	0.98	1.00	1.00
9-Sep	0	0	0	130	5,343	8,217	0.98	1.00	1.00
10-Sep	0	0	0	130	5,343	8,217	0.98	1.00	1.00
11-Sep	0	0	2	130	5,343	8,219	0.98	1.00	1.00

continued

Table 6. Continued (page 3 of 3)

date	daily counts			cumulative counts			cumulative proportion		
	2001	2002	2003	2001	2002	2003	2001	2002	2003
12-Sep	0	0	1	130	5,343	8,220	0.98	1.00	1.00
13-Sep	0	0	0	130	5,343	8,220	0.98	1.00	1.00
14-Sep	1	0	1	131	5,343	8,221	0.99	1.00	1.00
15-Sep	0	0	0	131	5,343	8,221	0.99	1.00	1.00
16-Sep	0	0	0	131	5,343	8,221	0.99	1.00	1.00
17-Sep	0	0	0	131	5,343	8,221	0.99	1.00	1.00
18-Sep	0	0	0	131	5,343	8,221	0.99	1.00	1.00
19-Sep	0	0		131	5,343		0.99	1.00	
20-Sep	0	0		131	5,343		0.99	1.00	
21-Sep	0			131	5,343		0.99		
22-Sep	1			132	5,343		1.00		
23-Sep	0			132	5,343		1.00		
24-Sep	0			132	5,343		1.00		
25-Sep	0			132	5,343		1.00		
26-Sep	0			132	5,343		1.00		
27-Sep	0			132	5,343		1.00		
28-Sep	0			132	5,343		1.00		
29-Sep	0			132	5,343		1.00		
30-Sep	0			132	5,343		1.00		
1-Oct	0			132	5,343		1.00		
2-Oct	0			132	5,343		1.00		
3-Oct	0			132	5,343		1.00		
4-Oct	0			132	5,343		1.00		

Table 7. Historic sockeye salmon passage, Kanektok River, 2001-2003.

date	daily counts			cumulative counts			cumulative proportion		
	2001	2002	2003	2001	2002	2003	2001	2002	2003
22-Jun									
23-Jun									
24-Jun			111			111			0.00
25-Jun			182			293			0.00
26-Jun			368			661			0.01
27-Jun			467			1,128			0.01
28-Jun			382			1,510			0.01
29-Jun			815			2,325			0.02
30-Jun			2,088			4,413			0.03
1-Jul		222	1,821		222	6,234	0.00	0.05	
2-Jul		1,128	1,867		1,350	8,101	0.02	0.06	
3-Jul		603	3,098		1,953	11,199	0.03	0.09	
4-Jul		1,457	8,016		3,410	19,215	0.06	0.15	
5-Jul		3,152	6,399		6,562	25,614	0.11	0.20	
6-Jul		1,326	7,431		7,888	33,045	0.14	0.26	
7-Jul		1,928	4,734		9,816	37,779	0.17	0.30	
8-Jul		2,008	6,896		11,824	44,675	0.20	0.35	
9-Jul		1,605	9,163		13,429	53,838	0.23	0.42	
10-Jul		2,404	6,233		15,833	60,071	0.27	0.47	
11-Jul		2,645	5,621		18,478	65,692	0.32	0.52	
12-Jul		1,686	6,477		20,164	72,169	0.35	0.57	
13-Jul		2,292	4,884		22,456	77,053	0.38	0.60	
14-Jul		2,303	5,284		24,759	82,337	0.42	0.65	
15-Jul		2,083	3,714		26,842	86,051	0.46	0.68	
16-Jul		1,388	3,949		28,230	90,000	0.48	0.71	
17-Jul		3,186	2,069		31,416	92,069	0.54	0.72	
18-Jul		2,509	3,852		33,925	95,921	0.58	0.75	
19-Jul		1,217	3,879		35,142	99,800	0.60	0.78	
20-Jul		1,678	3,574		36,820	103,374	0.63	0.81	
21-Jul		1,402	2,045		38,222	105,419	0.65	0.83	
22-Jul		2,775	2,481		40,997	107,900	0.70	0.85	
23-Jul		2,184	1,935		43,181	109,835	0.74	0.86	
24-Jul		1,789	1,216		44,970	111,051	0.77	0.87	
25-Jul		1,474	1,323		46,444	112,374	0.80	0.88	
26-Jul		1,149	1,588		47,593	113,962	0.82	0.89	
27-Jul		926	918		48,519	114,880	0.83	0.90	
28-Jul		1,407	1,740		49,926	116,620	0.86	0.91	
29-Jul		1,135	1,237		51,061	117,857	0.87	0.92	
30-Jul		952	937		52,013	118,794	0.89	0.93	
31-Jul		1,221	962		53,234	119,756	0.91	0.94	
1-Aug		1,131	914		54,365	120,670	0.93	0.95	
2-Aug		446	728		54,811	121,398	0.94	0.95	

continued

Table 7. Continued (page 2 of 3)

date	daily counts			cumulative counts			cumulative proportion		
	2001	2002	2003	2001	2002	2003	2001	2002	2003
3-Aug		700	667		55,511	122,065		0.95	0.96
4-Aug		557	724		56,068	122,789		0.96	0.96
5-Aug		470	802		56,538	123,591		0.97	0.97
6-Aug		208	572		56,746	124,163		0.97	0.97
7-Aug		199	442		56,945	124,605		0.98	0.98
8-Aug		154	408		57,099	125,013		0.98	0.98
9-Aug		153	270		57,252	125,283		0.98	0.98
10-Aug	56	120	198	56	57,372	125,481	0.08	0.98	0.98
11-Aug	137	94	154	193	57,466	125,635	0.26	0.98	0.99
12-Aug	87	43	253	280	57,509	125,888	0.38	0.99	0.99
13-Aug	93	194	131	373	57,703	126,019	0.51	0.99	0.99
14-Aug	57	66	95	430	57,769	126,114	0.59	0.99	0.99
15-Aug	19	93	49	449	57,862	126,163	0.61	0.99	0.99
16-Aug	48	77	88	497	57,939	126,251	0.68	0.99	0.99
17-Aug	33	52	127	530	57,991	126,378	0.72	0.99	0.99
18-Aug	23	28	87	553	58,019	126,465	0.75	0.99	0.99
19-Aug	14	30	73	567	58,049	126,538	0.77	0.99	0.99
20-Aug	16	28	86	583	58,077	126,624	0.79	1.00	0.99
21-Aug	12	18	114	595	58,095	126,738	0.81	1.00	0.99
22-Aug	9	43	88	604	58,138	126,826	0.82	1.00	0.99
23-Aug	9	26	87	613	58,164	126,913	0.83	1.00	1.00
24-Aug	8	22	100	621	58,186	127,013	0.84	1.00	1.00
25-Aug	14	24	71	635	58,210	127,084	0.86	1.00	1.00
26-Aug	7	18	47	642	58,228	127,131	0.87	1.00	1.00
27-Aug	11	16	33	653	58,244	127,164	0.89	1.00	1.00
28-Aug	11	7	42	664	58,251	127,206	0.90	1.00	1.00
29-Aug	2	9	27	666	58,260	127,233	0.91	1.00	1.00
30-Aug	4	10	20	670	58,270	127,253	0.91	1.00	1.00
31-Aug	7	20	10	677	58,290	127,263	0.92	1.00	1.00
1-Sep	1	16	13	678	58,306	127,276	0.92	1.00	1.00
2-Sep	0	11	13	678	58,317	127,289	0.92	1.00	1.00
3-Sep	8	3	14	686	58,320	127,303	0.93	1.00	1.00
4-Sep	8	13	12	694	58,333	127,315	0.94	1.00	1.00
5-Sep	8	5	25	702	58,338	127,340	0.96	1.00	1.00
6-Sep	0	5	16	702	58,343	127,356	0.96	1.00	1.00
7-Sep	0	0	22	702	58,343	127,378	0.96	1.00	1.00
8-Sep	1	0	6	703	58,343	127,384	0.96	1.00	1.00
9-Sep	0	5	9	703	58,348	127,393	0.96	1.00	1.00
10-Sep	0	3	14	703	58,351	127,407	0.96	1.00	1.00
11-Sep	0	-	16	703	58,353	127,423	0.96	1.00	1.00
12-Sep	1	1	11	704	58,353	127,434	0.96	1.00	1.00

continued

Table 7. Continued (page 3 of 3)

date	daily counts			cumulative counts			cumulative proportion		
	2001	2002	2003	2001	2002	2003	2001	2002	2003
13-Sep	2	1	3	706	58,354	127,437	0.96	1.00	1.00
14-Sep	3	1	7	709	58,355	127,444	0.96	1.00	1.00
15-Sep	4	5	6	713	58,360	127,450	0.97	1.00	1.00
16-Sep	6	0	5	719	58,360	127,455	0.98	1.00	1.00
17-Sep	2	6	8	721	58,366	127,463	0.98	1.00	1.00
18-Sep	0	1	8	721	58,367	127,471	0.98	1.00	1.00
19-Sep	0	0		721	58,367		0.98	1.00	
20-Sep	0	0		721	58,367		0.98	1.00	
21-Sep	4			725			0.99		
22-Sep	1			726			0.99		
23-Sep	3			729			0.99		
24-Sep	1			730			0.99		
25-Sep	0			730			0.99		
26-Sep	0			730			0.90		
27-Sep	3			733			1.00		
28-Sep	0			733			1.00		
29-Sep	0			733			1.00		
30-Sep	0			733			1.00		
1-Oct	0			733			1.00		
2-Oct	0			733			1.00		
3-Oct	2			735			1.00		



Table 8. Historic chum salmon passage, Kanektok River, 2001-2003.

Date	daily counts			cumulative counts			cumulative proportion		
	2001	2002	2003	2001	2002	2003	2001	2002	2003
11-Jun									
12-Jun									
13-Jun									
14-Jun									
15-Jun									
16-Jun									
17-Jun									
18-Jun									
19-Jun									
20-Jun									
21-Jun									
22-Jun									
23-Jun									
24-Jun			0			0			0.00
25-Jun			2			2			0.00
26-Jun			12			14			0.00
27-Jun			15			29			0.00
28-Jun			14			43			0.00
29-Jun			11			54			0.00
30-Jun			60			114			0.00
1-Jul		162	47		162	161		0.00	0.00
2-Jul		759	117		921	278		0.02	0.01
3-Jul		595	83		1,516	361		0.04	0.01
4-Jul		682	354		2,198	715		0.05	0.02
5-Jul		957	412		3,155	1,127		0.08	0.03
6-Jul		655	290		3,810	1,417		0.09	0.04
7-Jul		1,374	210		5,184	1,627		0.12	0.04
8-Jul		994	720		6,178	2,347		0.15	0.06
9-Jul		845	765		7,023	3,112		0.17	0.08
10-Jul		922	1,022		7,945	4,134		0.19	0.10
11-Jul		1,565	440		9,510	4,574		0.23	0.11
12-Jul		1,843	993		11,353	5,567		0.27	0.14
13-Jul		1,531	1,640		12,884	7,207		0.31	0.18
14-Jul		1,185	1,572		14,069	8,779		0.33	0.22
15-Jul		1,785	1,705		15,854	10,484		0.38	0.26
16-Jul		1,693	900		17,547	11,384		0.42	0.28
17-Jul		2,104	669		19,651	12,053		0.47	0.30
18-Jul		2,600	989		22,251	13,042		0.53	0.33
19-Jul		1,945	2,187		24,196	15,229		0.58	0.38
20-Jul		1,491	2,414		25,687	17,643		0.61	0.44
21-Jul		1,294	1,866		26,981	19,509		0.64	0.49

continued

Table 8. Continued (page 2 of 3)

Date	daily counts			cumulative counts			cumulative proportion		
	2001	2002	2003	2001	2002	2003	2001	2002	2003
22-Jul		1,735	1,154		28,716	20,663		0.68	0.52
23-Jul		2,141	1,612		30,857	22,275		0.73	0.56
24-Jul		1,372	963		32,229	23,238		0.77	0.58
25-Jul		765	695		32,994	23,933		0.79	0.60
26-Jul		720	1,246		33,714	25,179		0.80	0.63
27-Jul		849	542		34,563	25,721		0.82	0.64
28-Jul		952	1,048		35,515	26,769		0.85	0.67
29-Jul		699	1,075		36,214	27,844		0.86	0.69
30-Jul		889	906		37,103	28,750		0.88	0.72
31-Jul		753	559		37,856	29,309		0.90	0.73
1-Aug		727	881		38,583	30,190		0.92	0.75
2-Aug		479	813		39,062	31,003		0.93	0.77
3-Aug		567	806		39,629	31,809		0.94	0.79
4-Aug		569	671		40,198	32,480		0.96	0.81
5-Aug		396	1,178		40,594	33,658		0.97	0.84
6-Aug		228	1,398		40,822	35,056		0.97	0.87
7-Aug		170	1,005		40,992	36,061		0.98	0.90
8-Aug		184	914		41,176	36,975		0.98	0.92
9-Aug		149	792		41,325	37,767		0.98	0.94
10-Aug	101	121	766	101	41,446	38,533	0.10	0.99	0.96
11-Aug	164	78	315	265	41,524	38,848	0.25	0.99	0.97
12-Aug	197	48	459	462	41,572	39,307	0.44	0.99	0.98
13-Aug	134	107	151	596	41,679	39,458	0.56	0.99	0.98
14-Aug	153	32	177	749	41,711	39,635	0.71	0.99	0.99
15-Aug	89	78	89	838	41,789	39,724	0.79	0.99	0.99
16-Aug	84	41	58	922	41,830	39,782	0.87	1.00	0.99
17-Aug	33	46	39	955	41,876	39,821	0.90	1.00	0.99
18-Aug	25	21	53	980	41,897	39,874	0.93	1.00	1.00
19-Aug	15	21	31	995	41,918	39,905	0.94	1.00	1.00
20-Aug	6	24	13	1,001	41,942	39,918	0.95	1.00	1.00
21-Aug	12	17	25	1,013	41,959	39,943	0.96	1.00	1.00
22-Aug	3	11	21	1,016	41,970	39,964	0.96	1.00	1.00
23-Aug	4	10	18	1,020	41,980	39,982	0.96	1.00	1.00
24-Aug	4	8	14	1,024	41,988	39,996	0.97	1.00	1.00
25-Aug	5	0	17	1,029	41,988	40,013	0.97	1.00	1.00
26-Aug	5	1	7	1,034	41,989	40,020	0.98	1.00	1.00
27-Aug	5	4	4	1,039	41,993	40,024	0.98	1.00	1.00
28-Aug	0	2	7	1,039	41,995	40,031	0.98	1.00	1.00
29-Aug	0	2	7	1,039	41,997	40,038	0.98	1.00	1.00
30-Aug	3	1	3	1,042	41,998	40,041	0.98	1.00	1.00
31-Aug	2	1	8	1,044	41,999	40,049	0.99	1.00	1.00

continued

Table 8. Continued (page 3 of 3)

date	daily counts			cumulative counts			cumulative proportion		
	2001	2002	2003	2001	2002	2003	2001	2002	2003
1-Sep	6	1	1	1,050	42,000	40,050	0.99	1.00	1.00
2-Sep	0	2	1	1,050	42,002	40,051	0.99	1.00	1.00
3-Sep	1	1	0	1,051	42,003	40,051	0.99	1.00	1.00
4-Sep	1	2	4	1,052	42,005	40,055	0.99	1.00	1.00
5-Sep	1	1	2	1,053	42,006	40,057	1.00	1.00	1.00
6-Sep	0	1	5	1,053	42,007	40,062	1.00	1.00	1.00
7-Sep	0	0	0	1,053	42,007	40,062	1.00	1.00	1.00
8-Sep	0	1	0	1,053	42,008	40,062	1.00	1.00	1.00
9-Sep	0	3	0	1,053	42,011	40,062	1.00	1.00	1.00
10-Sep	0	0	1	1,053	42,011	40,063	1.00	1.00	1.00
11-Sep	0	0	2	1,053	42,011	40,065	1.00	1.00	1.00
12-Sep	0	0	1	1,053	42,011	40,066	1.00	1.00	1.00
13-Sep	0	0	0	1,053	42,011	40,066	1.00	1.00	1.00
14-Sep	0	0	0	1,053	42,011	40,066	1.00	1.00	1.00
15-Sep	0	0	0	1,053	42,011	40,066	1.00	1.00	1.00
16-Sep	1	0	2	1,054	42,011	40,068	1.00	1.00	1.00
17-Sep	0	0	2	1,054	42,011	40,070	1.00	1.00	1.00
18-Sep	1	3	1	1,055	42,014	40,071	1.00	1.00	1.00
19-Sep	1	0		1,056			1.00		
20-Sep	0	0		1,056			1.00		
21-Sep	0			1,056			1.00		
22-Sep	0			1,056			1.00		
23-Sep	1			1,057			1.00		
24-Sep	0			1,057			1.00		
25-Sep	0			1,057			1.00		
26-Sep	0			1,057			1.00		
27-Sep	1			1,058			1.00		
28-Sep	0			1,058			1.00		
29-Sep	0			1,058			1.00		
30-Sep	0			1,058			1.00		
1-Oct	0			1,058			1.00		
2-Oct	0			1,058			1.00		
3-Oct	0			1,058			1.00		

Table 9. Historic coho salmon passage, Kanektok River, 2001-2003.

Date	daily counts			cumulative counts			cumulative proportion		
	2001	2002	2003	2001	2002	2003	2001	2002	2003
11-Jun									
12-Jun									
13-Jun									
14-Jun									
15-Jun									
16-Jun									
17-Jun									
18-Jun									
19-Jun									
20-Jun									
21-Jun									
22-Jun									
23-Jun									
24-Jun			0			0			0.00
25-Jun			0			0			0.00
26-Jun			0			0			0.00
27-Jun			0			0			0.00
28-Jun			0			0			0.00
29-Jun			0			0			0.00
30-Jun			0			0			0.00
1-Jul		0	0		0	0		0.00	0.00
2-Jul		0	0		0	0		0.00	0.00
3-Jul		0	0		0	0		0.00	0.00
4-Jul		0	0		0	0		0.00	0.00
5-Jul		0	0		0	0		0.00	0.00
6-Jul		0	0		0	0		0.00	0.00
7-Jul		0	0		0	0		0.00	0.00
8-Jul		0	0		0	0		0.00	0.00
9-Jul		0	0		0	0		0.00	0.00
10-Jul		0	0		0	0		0.00	0.00
11-Jul		0	0		0	0		0.00	0.00
12-Jul		0	4		0	4		0.00	0.00
13-Jul		0	0		0	4		0.00	0.00
14-Jul		0	8		0	12		0.00	0.00
15-Jul		0	1		0	13		0.00	0.00
16-Jul		0	4		0	17		0.00	0.00
17-Jul		0	6		0	23		0.00	0.00
18-Jul		0	2		0	25		0.00	0.00
19-Jul		0	6		0	31		0.00	0.00
20-Jul		0	8		0	39		0.00	0.00
21-Jul		0	5		0	44		0.00	0.00

continued

Table 9. Continued (page 3 of 3)

Date	daily counts			cumulative counts			cumulative proportion		
	2001	2002	2003	2001	2002	2003	2001	2002	2003
22-Jul		0	12		0	56		0.00	0.00
23-Jul		0	5		0	61		0.00	0.00
24-Jul		0	14		0	75		0.00	0.00
25-Jul		0	27		0	102		0.00	0.00
26-Jul		0	15		0	117		0.00	0.00
27-Jul		1	11		1	128		0.00	0.00
28-Jul		22	38		23	166		0.00	0.00
29-Jul		15	52		38	218		0.00	0.00
30-Jul		10	31		48	249		0.00	0.00
31-Jul		49	58		97	307		0.00	0.00
1-Aug		100	92		197	399		0.01	0.01
2-Aug		97	155		294	554		0.01	0.01
3-Aug		178	101		472	655		0.02	0.01
4-Aug		182	105		654	760		0.03	0.01
5-Aug		226	407		880	1,167		0.04	0.02
6-Aug		116	560		996	1,727		0.04	0.02
7-Aug		134	622		1,130	2,349		0.05	0.03
8-Aug		110	632		1,240	2,981		0.05	0.04
9-Aug		97	522		1,337	3,503		0.05	0.05
10-Aug	87	112	617	87	1,449	4,120	0.00	0.06	0.06
11-Aug	167	123	300	254	1,572	4,420	0.01	0.06	0.06
12-Aug	368	83	1,456	622	1,655	5,876	0.02	0.07	0.08
13-Aug	551	435	777	1,173	2,090	6,653	0.03	0.08	0.09
14-Aug	971	123	631	2,144	2,213	7,284	0.06	0.09	0.10
15-Aug	838	378	1,548	2,982	2,591	8,832	0.08	0.10	0.12
16-Aug	1,863	493	650	4,845	3,084	9,482	0.14	0.12	0.13
17-Aug	893	918	514	5,738	4,002	9,996	0.16	0.16	0.14
18-Aug	733	466	497	6,471	4,468	10,493	0.18	0.18	0.14
19-Aug	583	765	633	7,054	5,233	11,126	0.20	0.21	0.15
20-Aug	2,579	1,018	1,554	9,633	6,251	12,680	0.27	0.25	0.18
21-Aug	1,235	1,017	1,393	10,868	7,268	14,073	0.30	0.29	0.19
22-Aug	931	845	1,515	11,799	8,113	15,588	0.33	0.33	0.22
23-Aug	853	827	1,318	12,652	8,940	16,906	0.35	0.36	0.23
24-Aug	818	816	3,379	13,470	9,756	20,285	0.38	0.39	0.28
25-Aug	1,293	575	3,179	14,763	10,331	23,464	0.41	0.42	0.32
26-Aug	1,293	399	1,494	16,056	10,730	24,958	0.45	0.43	0.34
27-Aug	972	411	2,678	17,028	11,141	27,636	0.48	0.45	0.38

continued

Table 9. Continued (page 3 of 3)

Date	daily counts			cumulative counts			cumulative proportion		
	2001	2002	2003	2WI	2002	2003	2001	2002	2003
28-Aug	1,378	427	2,499	18,406	11,568	30,135	0.52	0.46	0.42
29-Aug	1,800	499	1,854	20,206	12,067	31,989	0.57	0.48	0.44
30-Aug	1,964	233	2,599	22,170	12,300	34,588	0.62	0.49	0.48
31-Aug	1,442	969	4,118	23,612	13,269	38,706	0.66	0.53	0.53
1-Sep	973	920	2,124	24,585	14,189	40,830	0.69	0.57	0.56
2-Sep	736	581	2,620	25,321	14,770	43,450	0.71	0.59	0.60
3-Sep	610	461	2,226	25,931	15,231	45,676	0.73	0.61	0.63
4-Sep	921	869	3,534	26,852	16,100	49,210	0.75	0.65	0.68
5-Sep	685	779	2,745	27,537	16,879	51,955	0.77	0.68	0.72
6-Sep	443	1,151	1,716	27,980	18,030	53,671	0.78	0.72	0.74
7-Sep	201	1,467	1,755	28,181	19,497	55,426	0.79	0.78	0.77
8-Sep	374	735	1,848	28,555	20,232	57,274	0.80	0.81	0.79
9-Sep	407	563	1,779	28,962	20,795	59,053	0.81	0.84	0.82
10-Sep	883	324	1,471	29,845	21,119	60,524	0.84	0.85	0.84
11-Sep	649	412	2,368	30,494	21,531	62,892	0.85	0.87	0.87
12-Sep	627	760	2,164	31,121	22,291	65,056	0.87	0.90	0.90
13-Sep	622	590	2,089	31,743	22,881	67,145	0.89	0.92	0.93
14-Sep	527	449	1,521	32,270	23,330	68,666	0.90	0.94	0.95
15-Sep	452	419	1,003	32,722	23,749	69,669	0.92	0.95	0.96
16-Sep	373	439	984	33,095	24,188	70,653	0.93	0.97	0.98
17-Sep	405	129	884	33,500	24,317	71,537	0.94	0.98	0.99
18-Sep	343	311	911	33,843	24,628	72,448	0.95	0.99	1.00
19-Sep	275	188		34,118	24,816		0.96	1.00	
20-Sep	215	67		34,333	24,883		0.96	1.00	
21-Sep	222			34,555			0.97		
22-Sep	166			34,721			0.97		
23-Sep	190			34,911			0.98		
24-Sep	134			35,045			0.98		
25-Sep	129			35,174			0.99		
26-Sep	58			35,232			0.99		
27-Sep	127			35,359			0.99		
28-Sep	54			35,413			0.99		
29-Sep	51			35,464			0.99		
30-Sep	36			35,500			1.00		
1-Oct	64			35,564			1.00		
2-Oct	68			35,632			1.00		
3-Oct	45			35,677			1.00		

Table 10. Historic pink salmon passage, Kanektok River, 2001-2003.

	daily counts			cumulative counts			cumulative proportion		
	2001	2002	2003	2001	2002	2003	2001	2002	2003
24-Jun			0			0			0.00
25-Jun			0			0			0.00
26-Jun			0			0			0.00
27-Jun			0			0			0.00
28-Jun			12			12			0.00
29-Jun			9			21			0.01
30-Jun			27			48			0.02
1-Jul		1	14		1	62	0.00		0.03
2-Jul		2	10		3	72	0.00		0.03
3-Jul		7	13		10	85	0.00		0.03
4-Jul		20	58		30	143	0.00		0.06
5-Jul		96	73		126	216	0.00		0.09
6-Jul		67	77		193	293	0.00		0.12
7-Jul		96	36		289	329	0.00		0.13
8-Jul		139	91		428	420	0.00		0.17
9-Jul		135	126		563	546	0.01		0.22
10-Jul		109	153		672	699	0.01		0.29
11-Jul		218	84		890	783	0.01		0.32
12-Jul		244	109		1,134	892	0.01		0.37
13-Jul		376	144		1,510	1,036	0.02		0.42
14-Jul		691	145		2,201	1,181	0.03		0.48
15-Jul		916	168		3,117	1,349	0.04		0.55
16-Jul		713	135		3,830	1,484	0.04		0.61
17-Jul		1,413	90		5,243	1,574	0.06		0.64
18-Jul		2,822	86		8,065	1,660	0.09		0.68
19-Jul		3,059	92		11,124	1,752	0.13		0.72
20-Jul		2,489	89		13,613	1,841	0.16		0.75
21-Jul		1,776	47		15,389	1,888	0.18		0.77
22-Jul		2,615	60		18,004	1,948	0.21		0.80
23-Jul		4,291	83		22,295	2,031	0.26		0.83
24-Jul		8,111	15		30,406	2,046	0.35		0.84
25-Jul		3,368	26		33,774	2,072	0.39		0.85
26-Jul		1,893	23		35,667	2,095	0.41		0.86
27-Jul		2,793	25		38,460	2,120	0.44		0.87
28-Jul		3,431	26		41,891	2,146	0.48		0.88
29-Jul		2,703	15		44,594	2,161	0.51		0.88
30-Jul		4,760	20		49,354	2,181	0.57		0.89
31-Jul		5,781	4		55,135	2,185	0.63		0.89
1-Aug		6,811	1		61,946	2,186	0.71		0.89
2-Aug		3,074	14		65,020	2,200	0.75		0.90

continued

Table 10. Continued (page 2 of 3)

date	daily counts			cumulative counts			cumulative proportion		
	2001	2002	2003	2001	2002	2003	2001	2002	2003
3-Aug		4,490	4		69,510	2,204		0.80	0.90
4-Aug		3,952	12		73,462	2,216		0.84	0.91
5-Aug		3,298	12		76,760	2,228		0.88	0.91
6-Aug		1,785	15		78,545	2,243		0.90	0.92
7-Aug		1,186	7		79,731	2,250		0.92	0.92
8-Aug		994	14		80,725	2,264		0.93	0.93
9-Aug		851	5		81,576	2,269		0.94	0.93
10-Aug	0	843	5	0	82,419	2,274		0.95	0.93
11-Aug	9	490	5	9	82,909	2,279		0.95	0.93
12-Aug	2	283	10	11	83,192	2,289	0.00	0.96	0.94
13-Aug	1	954	8	12	84,146	2,297	0.47	0.97	0.04
14-Aug	0	345	3	12	84,491	2,300	0.58	0.97	0.94
15-Aug	2	571	1	14	85,062	2,301	0.63	0.98	0.94
16-Aug	0	343	0	14	85,405	2,301	0.63	0.98	0.94
17-Aug	1	304	0	15	85,799	2,301	0.74	0.99	0.94
18-Aug	0	219	0	15	86,018	2,301	0.74	0.99	0.94
19-Aug	0	236	1	15	86,254	2,302	0.79	0.99	0.94
20-Aug	0	154	2	15	86,408	2,304	0.79	0.99	0.94
21-Aug	2	144	0	17	86,552	2,304	0.79	0.99	0.94
22-Aug	0	130	7	17	86,682	2,311	0.79	1.00	0.95
23-Aug	0	90	13	17	86,772	2,324	0.89	1.00	0.95
24-Aug	0	79	12	17	86,851	2,336	0.89	1.00	0.96
25-Aug	0	42	7	17	86,893	2,343	0.89	1.00	0.96
26-Aug	0	19	11	17	86,912	2,354	0.89	1.00	0.96
27-Aug	0	16	7	17	86,928	2,361	0.89	1.00	0.97
28-Aug	0	27	10	17	86,955	2,371	0.89	1.00	0.97
29-Aug	1	13	13	18	86,968	2,384	0.89	1.00	0.98
30-Aug	0	12	9	18	86,980	2,393	0.89	1.00	0.98
31-Aug	0	10	4	18	86,990	2,397	0.95	1.00	0.98
1-Sep	0	7	13	18	86,997	2,410	0.95	1.00	0.99
2-Sep	0	13	4	18	87,010	2,414	0.95	1.00	0.99
3-Sep	0	5	5	18	87,015	2,419	0.95	1.00	0.99
4-Sep	0	3	0	18	87,018	2,419	0.95	1.00	0.99
5-Sep	0	4	3	18	87,022	2,422	0.95	1.00	0.99
6-Sep	0	6	0	18	87,028	2,422	0.95	1.00	0.99
7-Sep	0	0	6	18	87,028	2,428	0.95	1.00	0.99

continued



Table 10. Continued (page 3 of 3)

date	daily counts			cumulative counts			cumulative proportion		
	2001	2002	2003	2001	2002	2003	2001	2W2	2003
8-Sep	0	0	5	18	87,028	2,433	0.95	1.00	1.00
9-Sep	0	0	2	18	87,028	2,435	0.95	1.00	1.00
10-Sep	0	0	0	18	87,028	2,435	0.95	1.00	1.00
11-Sep	0	1	1	18	87,029	2,436	0.95	1.00	1.00
12-Sep	0	0	3	18	87,029	2,439	0.95	1.00	1.00
13-Sep	0	1	2	18	87,030	2,441	0.95	1.00	1.00
14-Sep	0	0	0	18	87,030	2,441	0.95	1.00	1.00
15-Sep	1	1	0	19	87,031	2,441	0.95	1.00	1.00
16-Sep	0	4	0	19	87,035	2,441	0.95	1.00	1.00
17-Sep	0	1	2	19	87,036	2,443	1.00	1.00	1.00
18-Sep	0	0	0	19	87,036	2,443	1.00	1.00	1.00
19-Sep	0	0		19	87,036		1.00	1.00	
20-Sep	0	0		19	87,036		1.00	1.00	
21-Sep	0			19			1.00		
22-Sep	0			19			1.00		
23-Sep	0			19			1.00		
24-Sep	0			19			1.00		
25-Sep	0			19			1.00		
26-Sep	0			19			1.00		
27-Sep	0			19			1.00		
28-Sep	0			19			1.00		
29-Sep	0			19			1.00		
30-Sep	0			19			1.00		
1-Oct	0			19			1.00		
2-Oct	0			19			1.00		
3-Oct	0			19			1.00		

Table 11. Historic Dolly Varden passage, Kanektok River, 2001-2003.

Date	daily counts			cumulative counts			cumulative proportion		
	2001	2002	2003	2001	2002	2003	2001	2002	2003
24-Jun			0			0			0.00
25-Jun			0			0			0.00
26-Jun			1			1			0.00
27-Jun			1			2			0.00
28-Jun			5			7			0.00
29-Jun			0			7			0.00
30-Jun			1			8			0.00
1-Jul		7	1		7	9		0.00	0.00
2-Jul		18	9		25	18		0.00	0.00
3-Jul		6	2		31	20		0.00	0.00
4-Jul		5	17		36	37		0.00	0.00
5-Jul		12	23		48	60		0.00	0.01
6-Jul		10	18		58	78		0.00	0.01
7-Jul		6	7		64	85		0.00	0.01
8-Jul		21	44		85	129		0.01	0.01
9-Jul		53	72		138	201		0.01	0.02
10-Jul		128	72		266	273		0.02	0.03
11-Jul		177	49		443	322		0.03	0.03
12-Jul		543	48		986	370		0.06	0.04
13-Jul		418	87		1,404	457		0.09	0.05
14-Jul		551	145		1,955	602		0.12	0.07
15-Jul		903	186		2,948	788		0.19	0.09
16-Jul		700	157		3,648	945		0.23	0.10
17-Jul		1,623	81		5,271	1,026		0.34	0.11
18-Jul		2,245	116		7,516	1,142		0.48	0.12
19-Jul		1,071	479		8,587	1,621		0.55	0.18
20-Jul		893	673		9,480	2,294		0.60	0.25
21-Jul		431	414		9,911	2,708		0.63	0.29
22-Jul		848	400		10,759	3,108		0.69	0.34
23-Jul		771	409		11,530	3,517		0.74	0.38
24-Jul		770	170		12,300	3,687		0.78	0.40
25-Jul		271	148		12,571	3,835		0.80	0.42
26-Jul		178	167		12,749	4,002		0.81	0.43
27-Jul		253	88		13,002	4,090		0.83	0.44
28-Jul		128	121		13,130	4,211		0.84	0.46
29-Jul		94	295		13,224	4,506		0.84	0.49
30-Jul		175	304		13,399	4,810		0.85	0.52
31-Jul		242	108		13,641	4,918		0.87	0.53
1-Aug		154	136		13,795	5,054		0.88	0.55
2-Aug		90	210		13,885	5,264		0.89	0.57
3-Aug		263	164		14,148	5,428		0.90	0.59

continued

Table 11. Continued (page 2 of 3)

Date	daily counts			cumulative counts			cumulative proportion		
	2001	2002	2003	2001	2002	2003	2001	2002	2003
4-Aug		109	170		14,257	5,598		0.91	0.61
5-Aug		48	601		14,305	6,199		0.91	0.67
6-Aug		24	706		14,329	6,905		0.91	0.75
7-Aug		10	305		14,339	7,210		0.91	0.78
8-Aug		15	367		14,354	7,577		0.92	0.82
9-Aug		7	361		14,361	7,938		0.92	0.86
10-Aug	46	1	209	46	14,362	8,147	0.02	0.92	0.88
11-Aug	118	5	37	164	14,367	8,184	0.06	0.92	0.89
12-Aug	144	12	80	308	14,379	8,264	0.12	0.92	0.90
13-Aug	261	26	30	569	14,405	8,294	0.22	0.92	0.90
14-Aug	406	46	21	975	14,451	8,315	0.38	0.92	0.90
15-Aug	137	76	2	1,112	14,527	8,317	0.44	0.93	0.90
16-Aug	184	91	13	1,296	14,618	8,330	0.51	0.93	0.90
17-Aug	115	138	23	1,411	14,756	8,353	0.55	0.94	0.91
18-Aug	56	157	18	1,467	14,913	8,371	0.57	0.95	0.91
19-Aug	63	107	18	1,530	15,020	8,389	0.60	0.96	0.91
20-Aug	62	46	18	1,592	15,066	8,407	0.62	0.96	0.91
21-Aug	39	24	30	1,631	15,090	8,437	0.64	0.96	0.92
22-Aug	39	8	59	1,670	15,098	8,496	0.65	0.96	0.92
23-Aug	46	62	52	1,716	15,160	8,548	0.67	0.97	0.93
24-Aug	39	32	57	1,755	15,192	8,605	0.69	0.97	0.93
25-Aug	93	32	51	1,848	15,224	8,656	0.72	0.97	0.94
26-Aug	50	23	38	1,898	15,247	8,694	0.74	0.97	0.94
27-Aug	75	51	19	1,973	15,298	8,713	0.77	0.98	0.95
28-Aug	58	6	20	2,031	15,304	8,733	0.79	0.98	0.95
29-Aug	86	25	19	2,117	15,329	8,752	0.83	0.98	0.95
30-Aug	44	2	58	2,161	15,331	8,810	0.85	0.98	0.96
31-Aug	38	15	122	2,199	15,346	8,932	0.86	0.98	0.97
1-Sep	34	18	48	2,233	15,364	8,980	0.87	0.98	0.97
2-Sep	16	27	20	2,240	15,391	9,000	0.88	0.98	0.98
3-Sep	13	5	10	2,262	15,396	9,010	0.88	0.98	0.98
4-Sep	23	88	50	2,285	15,484	9,060	0.89	0.99	0.98
5-Sep	14	13	35	2,299	15,497	9,095	0.90	0.99	0.99
6-Sep	4	86	15	2,303	15,583	9,110	0.90	0.99	0.99
7-Sep	6	28	11	2,309	15,611	9,121	0.90	1.00	0.99
8-Sep	16	12	8	2,325	15,623	9,129	0.91	1.00	0.99
9-Sep	19	27	15	2,344	15,650	9,144	0.92	1.00	0.99
10-Sep	16	7	5	2,360	15,657	9,149	0.92	1.00	0.99
11-Sep	16	2	14	2,376	15,659	9,163	0.93	1.00	0.99
12-Sep	13	3	6	2,389	15,662	9,169	0.93	1.00	1.00

continued

Table 11. Continued (page 3 of 3)

date	daily counts			cumulative counts			cumulative proportion		
	2001	2W2	2003	2001	2002	2003	2001	2002	2003
13-Sep	29	3	11	2,418	15,665	9,180	0.95	1.00	1.00
14-Sep	17	0	10	2,435	15,665	9,190	0.95	1.00	1.00
15-Sep	11	4	8	2,446	15,669	9,198	0.96	1.00	1.00
16-Sep	12	3	4	2,458	15,672	9,202	0.96	1.00	1.00
17-Sep	18	1	3	2,476	15,673	9,205	0.97	1.00	1.00
18-Sep	12	1	9	2,488	15,674	9,214	0.97	1.00	1.00
19-Sep	18			2,506			0.98		
20-Sep	15			2,521			0.99		
21-Sep	5			2,526			0.99		
22-Sep	3			2,529			0.99		
23-Sep	11			2,540			0.99		
24-Sep	4			2,544			1.00		
25-Sep	3			2,547			1.00		
26-Sep	3			2,550			1.00		
27-Sep	0			2,550			1.00		
28-Sep	1			2,551			1.00		
29-Sep	3			2,554			1.00		
30-Sep	0			2,524			1.00		
1-Oct	0			2,554			1.00		
2-Oct	2			2,556			1.00		
3-Oct	0			2,556			1.00		

Table 12. The age and sex of the chinook salmon escapement sampled at the Kanektok River weir, 2003.

			age class															
			1.1		1.2		2.2		1.3		1.4		1.5		2.4		total	
date	#sampled		escp.	%	escp.	%	escp.	%	escp.	%	escp.	%	escp.	%	escp.	%	escp.	%
(6/24-7/17)	62	M	157	4.8	787	24.2	0	0	945	29	315	9.7	0	0	0	0	2,204	67.7
		F	0	0	0	0	0	0	262	8.1	682	20.9	105	3.2	0	0	1,049	32.3
		Subtotal	157	4.8	787	24.2	0	0	1,207	37.1	997	30.6	105	3.2	0	0	3,253	100
(7/18-7/24)	72	M	35	1.4	665	26.4	0	0	805	31.9	420	16.7	0	0	0	0	1,925	76.4
		F	0	0	0	0	0	0	35	1.4	560	22.2	0	0	0	0	595	23.6
		Subtotal	35	1.4	665	26.4	0	0	840	33.3	980	38.9	0	0	0	0	2,520	100
(7/25-9/18)	40	M	0	0	492	20	0	0	614	25	246	10	61	2.5	0	0	1,413	57.5
		F	0	0	0	0	0	0	246	10	799	32.5	0	0	0	0	1,045	42.5
		Subtotal	0	0	492	20	0	0	860	35	1,045	42.5	61	2.5	0	0	2,458	100
Season	174	M	192	2.3	1,944	23.6	0	0	2,364	28.7	981	11.9	61	0.7	0	0	5,542	67.3
		F	0	0	0	0	0	0	543	6.6	2,041	24.8	105	1.3	0	0	2,689	32.7
		Total	192	2.3	1,944	23.6	0	0	2,907	35.3	3,022	36.7	166	2	0	0	8,231	100

Table 13. The mean length of the chinook salmon escapement, Kanektok River weir, 2003.

date	sex		age class					
			1.1	1.2	2.2	1.3	1.4	1.5
7/5-7/17 (6124-7117)	M	Mean Length	401	518		683	793	
		Std. Error	18	15		20	28	
		Range	383- 436	402- 610		486- 796	696- 870	
		Sample Size	3	15	0	18	6	0
	F	Mean Length				774	804	926
		Std. Error				14	20	46
		Range				738- 811	654- 960	880- 972
		Sample Size	0	0	0	5	13	2
7118-7/24 (7118-7/24)	M	Mean Length	371	524		710	851	
		Std. Error		17		13	22	
		Range	371- 371	407- 663		616- 846	732- 940	
		Sample Size	1	19	0	23	12	0
	F	Mean Length				767	828	
		Std. Error					13	
		Range				767- 767	750- 935	
		Sample Size	0	0	0	1	16	0
7/26-8/2 (7/25-9/18)	M	Mean Length		546		683	818	795
		Std. Error		10		36	25	
		Range		507- 585		427- 820	750- 870	795- 795
		Sample Size	0	8	0	10	4	1
	F	Mean Length				807	848	
		Std. Error				17	13	
		Range				767- 835	776- 961	
		Sample Size	0	0	0	4	13	0
Season	M	Mean Length	395	527		692	824	795
		Std. Error	18	9		13	14	
		Range	371- 436	402- 663		427- 846	696- 940	795- 795
		Sample Size	4	42	0	51	22	1
	F	Mean Length				789	828	926
		Std. Error				11	9	46
		Range				738- 835	654- 961	880- 972
		Sample Size	0	0	0	10	42	2

Table 14. The age and sex of the sockeye salmon escanement sampled at the Kanektok River weir. 2003

dates	# sampled		age class																	
			0.2		0.3		1.2		0.4		1.3		2.2		1.4		2.3		total	
			escp	%	escp	%	escp	%	escp	%	escp	%	escp	%	escp	%	escp	%	escp	%
7/5,8-10 (6/24-7/10)	115	M	0	0	0	0	5,746	9.6	0	0	24,028	40	0	0	522	0.9	522	0.9	30,819	51.3
		F	0	0	0	0	4,179	6.9	0	0	22,984	38.3	0	0	1,045	1.7	1,045	1.7	29,252	48.7
		Subtotal	0	0	0	0	9,925	16.5	0	0	47,012	78.3	0	0	1,567	2.6	1,567	2.6	60,071	100
7/12,15-18 (7/11-7/18)	138	M	0	0	260	0.7	5,196	14.5	0	0	9,872	27.6	0	0	779	2.2	0	0	16,107	44.9
		F	0	0	0	0	5,975	16.7	0	0	12,989	36.2	260	0.7	0	0	520	1.4	19,743	55.1
		Subtotal	0	0	260	0.7	11,171	31.2	0	0	22,861	63.8	260	0.7	779	2.2	520	1.4	35,850	100
7/19/2024 (7/19-7/25)	75	M	0	0	0	0	2,633	16	0	0	6,362	38.7	0	0	0	0	0	0	8,994	54.7
		F	0	0	0	0	3,729	22.7	0	0	3,510	21.3	0	0	219	1.3	0	0	7,459	45.3
		Subtotal	0	0	0	0	6,362	38.7	0	0	9,872	60	0	0	219	1.3	0	0	16,453	100
7/26-31,8/2 (7/26-9/18)	75	M	0	0	0	0	2,617	17.4	0	0	4,227	28	0	0	0	0	202	1.4	7,045	46.7
		F	0	0	0	0	3,824	25.3	0	0	4,026	26.7	0	0	0	0	201	1.3	8,052	53.3
		Subtotal	0	0	0	0	6,441	42.7	0	0	8,253	54.7	0	0	0	0	403	2.7	15,097	100
Season	403	M	0	0	260	0.2	16,191	12.7	0	0	44,489	34.9	0	0	1,302	1	724	0.6	62,965	49.4
		F	0	0	0	0	17,708	13.9	0	0	43,509	34.1	260	0.2	1,264	1	1,765	1.4	64,506	50.6
		Total	0	0	260	0.2	33,899	26.6	0	0	87,998	69	260	0.2	2,566	2	2,489	2	127,471	100

Table 15. The mean length of the sockeye salmon escapement at the Kanektok River weir, 2003.

			age class								
			0.2	0.3	1.2	0.4	1.3	2.2	1.4	2.3	
7/5.8-10 (6124-7110)	M	Mean Length			542		585		595	492	
		Std. Error			9		4				
		Range			498- 605		444- 630		595- 595	492- 492	
		Sample Size	0	0	11	0	46	0	1	1	
	F	Mean Length			500		548		592	511	
		Std. Error			12		4		19	38	
		Range			450- 563		475- 591		573- 611	473- 549	
		Sample Size	0	0	8	0	44	0	2	2	
	7/12,15-18 (7111-7/18)	M	Mean Length		590	541		580		587	
			Std. Error			5		5		34	
			Range		590- 590	495- 600		518- 629		529- 648	
			Sample Size	0	1	20	0	38	0	3	0
F		Mean Length			510		550	514		533	
		Std. Error			5		4			10	
		Range			455- 565		472- 615	514- 514		523- 542	
		Sample Size	0	0	23	0	50	1	0	2	
711912024 (7/19-7/25)		M	Mean Length			524		578			
			Std. Error			5		6			
			Range			497- 553		479- 622			
			Sample Size	0	0	12	0	29	0	0	0
	F	Mean Length			493		541		524		
		Std. Error			6		7				
		Range			444- 525		480- 578		524- 524		
		Sample Size	0	0	17	0	16	0	1	0	
	7126-31,812 (7/26-9/18)	M	Mean Length			525		593			524
			Std. Error			8		6			
			Range			467- 563		533- 650			524- 524
			Sample Size	0	0	13	0	21	0	0	1
F		Mean Length			508		544			571	
		Std. Error			5		6				
		Range			467- 559		486- 585			571-571	
		Sample Size	0	0	19	0	20	0	0	1	
Season		M	Mean Length		590	536		583		590	501
			Std. Error			4		3		34	
			Range		590- 590	467- 605		444- 650		529- 648	492- 524
			Sample Size	0	1	56	0	134	0	4	2
	F	Mean Length			504		548	514	580	524	
		Std. Error			4		2		19	26	
		Range			444- 565		472- 615	514- 514	524- 611	473- 571	
		Sample Size	0	0	67	0	130	1	3	5	



Table 16. The age and sex of the chum salmon escapement, Kanektok River weir, 2003

date	# sampled	age class								total	
		0.2		0.3		0.4		0.5			
		escp	%	escp	%	escp	%	escp	%	escp	%
(6/24-7/13)	191M	0	0	2,943	40.8	641	8.9	151	2.1	3,736	51.8
	F	0	0	2,717	37.7	604	8.4	151	2.1	3,471	48.2
	Subtotal	0	0	5,660	78.5	1,245	17.3	302	4.2	7,207	100
(7/14-7/20)	183M	57	0.5	4,446	42.6	855	8.2	114	1.1	5,472	52.5
	F	114	1.1	4,161	39.9	570	5.5	114	1.1	4,959	47.5
	Subtotal	171	1.6	8,607	82.5	1,425	13.7	228	2.2	10,431	100
(7/21-7/26)	180M	0	0	3,098	41.1	335	4.5	84	1.1	3,517	46.7
	F	0	0	3,684	48.9	335	4.4	0	0	4,019	53.3
	Subtotal	0	0	6,782	90	670	8.9	84	1.1	7,536	100
(7/27-9/18)	179M	0	0	6,988	46.9	333	2.2	166	1.1	7,488	50.3
	F	166	1.1	6,739	45.3	499	3.4	0	0	7,404	49.7
	Subtotal	166	1.1	13,727	92.2	832	5.6	166	1.1	14,892	100
Season	733M	57	0.1	17,476	43.6	2,164	5.4	515	1.3	20,212	50.4
	F	280	0.7	17,301	43.2	2,008	5	265	0.6	19,854	49.6
	Total	337	0.8	34,777	86.8	4,172	10.4	780	1.9	40,066	100

Table 17. The mean length of the chum salmon escauement. Kanektok River weir. 2003

dates	sex		age class			
			0 2	0.3	0.4	0.5
(6/24-7/13)	M	Mean Length		592	587	620
		Std. Error		3	8	4
		Range		526- 670	524- 638	608- 629
		Sample Size	0	78	17	4
	F	MeanLength		562	569	579
		Std. Error		3	8	11
		Range		510- 611	506- 621	561- 601
		Sample Size	0	72	16	4
(7114-7120)	M	Mean Length	551	580	593	589
		Std. Error		3	8	26
		Range	551- 551	512- 623	520- 625	563- 615
		Sample Size	1	78	15	2
	F	Mean Length	487	552	553	587
		Std. Error	10	3	9	22
		Range	477- 497	496- 623	492- 597	565- 608
		Sample Size	2	73	10	2
(7121-7/26)	M	Mean Length		568	585	613
		Std. Error		3	5	13
		Range		515- 632	567- 606	600- 626
		Sample Size	0	74	8	2
	F	Mean Length		546	555	
		Std. Error		3	10	
		Range		480- 618	521- 599	
		Sample Size	0	88	8	0
(7127-9118)	M	Mean Length		569	570	603
		Std. Error		3	10	36
		Range		510- 645	546- 595	567- 638
		Sample Size	0	84	4	2
	F	Mean Length	515	550	560	
		Std. Error	4	3	17	
		Range	511-518	496- 600	510-617	
		Sample Size	2	81	6	0
Season	M	Mean Length	551	576	587	606
		Std. Error		2	4	13
		Range	551- 551	510- 670	520- 638	563- 638
		Sample Size	1	314	44	10
	F	Mean Length	503	552	560	582
		Std. Error	5	2	6	11
		Range	477- 518	480- 623	492- 621	561- 608
		Sample Size	4	314	40	6

Table 18. The age and sex of the coho salmon escapement, Kanektok River weir, 2003.

		age class							
date	# sampled	1.1		2.1		3.1		total	
		escp	%	escp	%	escp	%	escp	%
(6/24-8/23)	68M	0	0	6,961	41.2	994	5.9	7,956	47.1
	F	746	4.4	6,713	39.7	1,492	8.8	8,950	52.9
	Subtotal	746	4.4	13,674	80.9	2,486	14.7	16,906	100
(8/24-9/4)	67M	0	0	13,018	40.3	1,928	6	14,947	46.3
	F	0	0	14,947	46.3	2,411	7.4	17,357	53.7
	Subtotal	0	0	27,965	86.6	4,339	13.4	32,304	100
(9/5-9/18)	61M	381	1.7	9,524	41	1,524	6.6	11,429	49.2
	F	381	1.6	9,143	39.3	2,286	9.8	11,809	50.8
	Subtotal	762	3.3	18,667	80.3	3,810	16.4	23,238	100
season	196M	381	0.5	29,503	40.7	4,447	6.1	34,331	47.4
	F	1,127	1.6	30,802	42.5	6,188	8.6	38,117	52.6
	Total	1,508	2.1	60,305	83.2	10,635	14.7	72,448	100

Table 19. The mean length of the coho salmon escapement, Kanektok River weir. 2003.

date	sex		age class		
			1.1	2.1	3.1
8/14/2008 (6/24-8/23)	M	Mean Length		564	590
		Std. Error		8	17
		Range		474- 627	540- 609
		Sample Size	0	27	4
	F	Mean Length	462	544	560
		Std. Error	7	10	21
		Range	452- 476	441- 611	469- 602
		Sample Size	3	27	6
8/25/2026 (8/24-9/4)	M	Mean Length		580	602
		Std. Error		10	13
		Range		472- 652	584- 640
		Sample Size	0	27	4
	F	Mean Length		581	595
		Std. Error		6	7
		Range		465- 648	570- 606
		Sample Size	0	31	5
9/8/2009 (9/5-9/18)	M	Mean Length	636	600	610
		Std. Error		11	9
		Range	636- 636	484- 685	594- 634
		Sample Size	1	25	4
	F	Mean Length	538	584	585
		Std. Error		6	9
		Range	538- 538	508- 623	563- 623
		Sample Size	1	24	6
Season	M	Mean Length	636	583	602
		Std. Error	.	6	7
		Range	636- 636	472- 685	540- 640
		Sample Size	1	79	12
	F	Mean Length	488	574	583
		Std. Error	7	4	6
		Range	452- 538	441- 648	469- 623
		Sample Size	4	82	17

Table 20. Age and sex composition of chinook salmon, District 4 commercial harvest, 2003

			age class											
date	# sampled		1.1		1.2		1.3		1.4		1.5		total	
			catch	%	catch	%	catch	%	catch	%	catch	%	catch	%
(6/14,17)	199	M	0	0	1,507	27.6	2,028	37.2	932	17.1	82	1.5	4,550	83.4
		F	0	0	0	0	137	2.5	575	10.5	192	3.5	904	16.6
		Subtotal	0	0	1,507	27.6	2,165	39.7	1,507	27.6	274	5	5,454	100
(6/19,24)	210	M	169	4.3	1,201	30.5	1,501	38.1	507	12.9	19	0.5	3,397	86.2
		F	0	0	0	0	38	0.9	469	11.9	37	0.9	544	13.8
		Subtotal	169	4.3	1,201	30.5	1,539	39	976	24.8	56	1.4	3,941	100
(7/1- 8/28)	138	M	183	3.6	805	16	951	18.8	1,098	21.7	37	0.7	3,073	60.9
		F	73	1.5	476	9.4	293	5.8	1,134	22.5	0	0	1,976	39.1
		Subtotal	256	5.1	1,281	25.4	1,244	24.6	2,232	44.2	37	0.7	5,049	100
Season	547	M	352	2.4	3,513	24.3	4,481	31	2,536	17.5	138	0.9	11,020	76.3
		F	73	0.5	476	3.3	467	3.3	2,179	15.1	229	1.6	3,424	23.7
		Total	425	2.9	3,989	27.6	4,948	34.3	4,715	32.6	367	2.5	14,444	100

Table 21. The mean length of the chinook salmon, District 4 commercial fishery, 2003.

date	sex	age class				
		1.1	1.2	1.3	1.4	1.5
(6/14,17)	M	Mean Length	525	691	808	845
		Std. Error	6	8	17	22
		Range	401- 611	488- 845	630- 995	810- 886
		Sample Size	0	55	34	3
	F	Mean Length		792	849	930
		Std. Error		16	17	22
		Range		751- 849	656-1001	859-1003
		Sample Size	0	0	21	7
(6/19,24)	M	Mean Length	356	517	693	800
		Std. Error	4	7	8	20
		Range	330- 370	315- 635	530- 826	650- 995
		Sample Size	9	64	80	27
	F	Mean Length			751	827
		Std. Error			35	9
		Range			716- 785	750- 910
		Sample Sue	0	0	2	25
7/1,7,14 (711-8128)	M	Mean Length	391	530	722	825
		Std. Error	6	10	16	14
		Range	370- 405	425- 594	560- 835	680- 939
		Sample Size	5	22	26	30
	F	Mean Length	380	543	708	830
		Std. Error	15	16	34	11
		Range	365- 395	445- 635	600- 865	685- 999
		Sample Sue	2	13	8	31
Season	M	Mean Length	375	523	698	817
		Std. Error	4	4	6	9
		Range	330-405	315- 635	488- 845	630- 995
		Sample Size	14	141	180	91
	F	Mean Length	380	543	736	834
		Std. Error	15	16	22	8
		Range	365- 395	445- 635	600- 865	656-1001
		Sample Size	2	13	15	77

Table 22. Age and sex composition of sockeye salmon, District 4 commercial harvest, 2003.

date	# sampled	age class													
		0.3		1.2		1.3		2.2		1.4		2.3		total	
		catch	%	catch	%	catch	%	catch	%	catch	%	catch	%	catch	%
(6114,711)	97M	0	0	1,671	12.3	4,038	29.9	139	1	278	2.1	139	1	6,266	46.4
	F	0	0	1,253	9.3	5,570	41.2	0	0	0	0	418	3.1	7,241	53.6
	Subtotal	0	0	2,924	21.6	9,608	71.1	139	1	278	2.1	557	4.1	13,507	100
(7/7,9)	96M	0	0	1,934	20.8	3,095	33.3	97	1.1	0	0	97	1	5,223	56.3
	F	0	0	871	9.4	2,902	31.3	96	1	193	2.1	0	0	4,062	43.7
	Subtotal	0	0	2,805	30.2	5,997	64.6	193	2.1	193	2.1	97	1	9,285	100
(7111,14)	87M	0	0	1,119	16.1	2,719	39.1	320	4.6	80	1.1	80	1.1	4,318	62.1
	F	80	1.1	880	12.6	1,439	20.7	240	3.4	0	0	0	0	2,639	37.9
	Subtotal	80	1.1	1,999	28.7	4,158	59.8	560	8	80	1.1	80	1.1	6,957	100
(7/16-27)	85M	0	0	592	14.1	1,874	44.7	49	1.2	49	1.2	50	1.2	2,614	62.4
	F	0	0	690	16.5	838	20	0	0	0	0	49	1.2	1,578	37.6
	Subtotal	0	0	1,282	30.6	2,712	64.7	49	1.2	49	1.2	99	2.4	4,192	100
Season	365M	0	0	5,316	15.6	1,726	34.5	605	1.8	408	1.2	365	1.1	18,421	54.3
	F	80	0.2	3,694	10.9	749	31.7	337	1	193	0.6	467	1.4	15,520	45.7
	Total	80	0.2	9,010	26.5	2,475	66.2	942	2.8	601	1.8	832	2.5	33,941	100

Table 23. The mean length of the sockeye salmon from the District 4 commercial fishery, 2003.

date	sex	age class					
		0.3	1.2	1.3	2.2	1.4	2.3
(6/14-7/11)	M	Mean Length	530	594	550	590	615
		Std. Error	11	5		29	
		Range	435- 598	515- 630	550- 550	561- 619	615- 615
		Sample Size	0	12	29	1	2
	F	Mean Length	513	559			540
		Std. Error	8	3			19
		Range	490- 565	515- 599			510- 576
		Sample Size	0	9	40	0	3
(7/7,9)	M	Mean Length	537	583	515		605
		Std. Error	5	5			
		Range	480- 580	480- 625	515- 515		605- 605
		Sample Size	0	20	32	1	0
	F	Mean Length	512	555	495	530	
		Std. Error	9	5		45	
		Range	485- 575	500- 615	495- 495	485- 575	
		Sample Size	0	9	30	1	2
(7/11,14)	M	Mean Length	540	579	535	595	627
		Std. Error			6	1	9
		Range	510- 575	495- 631	493- 583	595- 595	627- 627
		Sample Size	0	14	34	4	1
	F	Mean Length	594	511	549	534	
		Std. Error		7	8	9	
		Range	594- 594	470- 554	460- 587	520- 552	
		Sample Size	1	11	18	3	0
(7/16-27)	M	Mean Length	526	586	520	655	595
		Std. Error	7	5			
		Range	485- 580	523- 640	520- 520	655- 655	595- 595
		Sample Size	0	12	38	1	1
	F	Mean Length	510	538			532
		Std. Error	7	5			
		Range	450- 570	500- 565			532- 532
		Sample Size	0	14	17	0	0
Season	M	Mean Length	534	586	534	599	612
		Std. Error	4	3	19	29	
		Range	435- 598	480- 640	493- 583	561- 655	595- 627
		Sample Size	0	58	133	7	4
	F	Mean Length	594	512	555	523	539
		Std. Error		4	2	9	45
		Range	594- 594	450- 575	460- 615	495- 552	485- 575
		Sample Size	1	43	105	4	2



Table 24. Age and sex composition of chum salmon, District 4 commercial harvest, 2003

			age class									
			0.2		0.3		0.4		0.5		total	
date	# sampled		catch	%	catch	%	catch	%	catch	%	catch	%
(6/14-7/7)	73	M	0	0	2,819	37	1,149	15	0	0	3,968	52
		F	0	0	3,028	40	522	7	104	1	3,654	48
		Subtotal	0	0	5,847	77	1,671	22	104	1	7,622	100
(7/9-14)	74	M	148	1	4,567	42	0	0	0	0	4,714	43
		F	147	1	5,745	53	147	1	147	1	6,187	57
		Subtotal	295	3	10,312	95	147	1	147	1	10,901	100
(7/14-8/127)	96	M	0	0	4,186	45	487	5	0	0	4,673	50
		F	0	0	4,186	45	389	4	97	1	4,672	50
		Subtotal	0	0	8,372	90	876	9	97	1	9,345	100
Season	243	M	148	1	11,571	42	1,635	6	0	0	13,354	48
		F	147	1	12,959	47	1,059	4	349	1	14,514	52
		Total	295	1	24,530	88	2,694	10	349	1	27,868	100

Table 27. The mean length of the coho salmon, District 4 commercial fishery, 2003.

date	sex	age class			
		1.1	2.1	3.1	
(7/17-8/16)	M	Mean Length	512	580	596
		Std. Error		4	21
		Range	512- 512	534- 623	575- 616
		Sample Size	1	31	2
	F	Mean Length	545	571	573
		Std. Error	44	11	16
		Range	501- 589	472- 626	491- 607
		Sample Size	2	19	7
(8/8,11)	M	Mean Length		594	534
		Std. Error		10	
		Range		523- 660	534- 534
		Sample Size	0	19	1
	F	Mean Length	595	577	592
		Std. Error	16	16	32
		Range	579- 610	473- 622	560- 624
		Sample Size	2	8	2
(8/13-27)	M	Mean Length	518	586	610
		Std. Error	33	9	18
		Range	452- 555	415- 664	575- 636
		Sample Size	3	39	3
	F	Mean Length	570	573	634
		Std. Error	35	14	24
		Range	535- 604	485- 624	610- 657
		Sample Size	2	10	2
Season	M	Mean Length	517	587	592
		Std. Error	33	6	15
		Range	452- 555	415- 664	534- 636
		Sample Size	4	89	6
	F	Mean Length	576	574	596
		Std. Error	17	8	13
		Range	501- 610	472- 626	491- 657
		Sample Size	6	37	11

Table 28. Daily and cumulative count of salmon carcasses, Kanektok River weir, 2003.

date	chinook		sockeye		chum		coho		pink	
	daily	cum	daily	cum	daily	cum	daily	cum	daily	cumul
30-Jun	0	0	0	0	1	1	0	0	0	0
2-Jul	0	0	1	1	0	1	0	0	0	0
6-Jul	0	0	0	1	1	2	0	0	0	0
7-Jul	0	0	1	2	2	4	0	0	0	0
8-Jul	0	0	4	6	5	9	0	0	0	0
9-Jul	0	0	2	8	5	14	0	0	0	0
10-Jul	0	0	0	8	1	15	0	0	0	0
11-Jul	0	0	0	8	3	18	0	0	0	0
12-Jul	0	0	3	11	8	26	0	0	0	0
13-Jul	0	0	3	14	4	30	0	0	0	0
14-Jul	0	0	2	16	6	36	0	0	0	0
15-Jul	0	0	2	18	4	40	0	0	1	1
16-Jul	0	0	1	19	2	42	0	0	1	2
17-Jul	0	0	1	20	3	45	0	0	1	3
18-Jul	0	0	0	20	3	48	0	0	0	3
19-Jul	0	0	4	24	9	57	0	0	0	3
20-Jul	0	0	1	25	14	71	0	0	0	3
21-Jul	0	0	5	30	21	92	0	0	0	3
22-Jul	0	0	6	36	23	115	0	0	1	4
23-Jul	0	0	1	37	24	139	0	0	1	5
24-Jul	0	0	3	40	47	186	0	0	0	5
25-Jul	0	0	3	43	54	240	0	0	0	5
26-Jul	0	0	2	45	71	311	0	0	1	6
27-Jul	2	2	0	45	42	353	0	0	1	7
28-Jul	3	5	2	47	120	473	0	0	3	10
29-Jul	4	9	2	49	205	678	0	0	7	17
30-Jul	5	14	3	52	180	858	0	0	5	22
31-Jul	5	19	6	58	188	1,046	0	0	5	27
1-Aug	14	33	3	61	207	1,253	0	0	10	37
2-Aug	27	60	2	63	216	1,469	0	0	12	49
3-Aug	40	100	5	68	165	1,634	0	0	4	53
4-Aug	61	161	5	73	250	1,884	0	0	7	60
5-Aug	57	218	4	77	194	2,078	0	0	6	66
6-Aug	52	270	7	84	177	2,255	0	0	6	72
7-Aug	52	322	14	98	215	2,470	0	0	8	80
8-Aug	84	406	15	113	289	2,759	0	0	3	83
9-Aug	82	488	16	129	291	3,050	0	0	2	85
10-Aug	56	544	34	163	238	3,288	0	0	0	85
11-Aug	52	596	38	201	289	3,577	0	0	2	87
12-Aug	34	630	53	254	367	3,944	0	0	0	87

continued

Table 28. Continued (2 of 2).

	chinook		sockeye		chum		coho		pink	
	daily	cumul	daily	cumul	daily	cumul	daily	cumul	daily	cumul
13-Aug	48	678	49	303	175	4,119	0	0	0	87
14-Aug	31	709	78	381	296	4,415	0	0	0	87
15-Aug	23	732	34	415	292	4,707	0	0	0	87
16-Aug	18	750	50	465	213	4,920	0	0	0	87
17-Aug	24	774	62	527	180	5,100	0	0	0	87
18-Aug	9	783	82	609	105	5,205	2	2	0	87
19-Aug	8	791	69	678	111	5,316	0	2	0	87
20-Aug	8	799	47	725	72	5,388	0	2	0	87
21-Aug	12	811	60	785	60	5,448	1	3	0	87
22-Aug	9	820	65	850	47	5,495	0	3	1	88
23-Aug	11	831	68	918	46	5,541	1	4	1	89
24-Aug	3	834	67	985	34	5,575	0	4	0	89
25-Aug	1	835	67	1,052	42	5,617	0	4	1	90
26-Aug	3	838	51	1,103	21	5,638	1	5	0	90
27-Aug	2	840	41	1,144	9	5,647	0	5	0	90
28-Aug	0	840	31	1,175	9	5,656	1	6	0	90
29-Aug	0	840	38	1,213	8	5,664	0	6	1	91
30-Aug	1	841	34	1,247	6	5,670	4	10	1	92
31-Aug	1	842	27	1,274	9	5,679	2	12	0	92
1-Sep	1	843	27	1,301	7	5,686	2	14	1	93
2-Sep	0	843	21	1,322	5	5,691	1	15	0	93
3-Sep	1	844	15	1,337	4	5,695	4	19	1	94
4-Sep	0	844	14	1,351	5	5,700	4	23	2	96
5-Sep	0	844	14	1,365	3	5,703	1	24	0	96
6-Sep	0	844	9	1,374	2	5,705	2	26	1	97
7-Sep	0	844	13	1,387	2	5,707	3	29	0	97
8-Sep	0	844	4	1,391	0	5,707	3	32	1	98
9-Sep	0	844	8	1,399	0	5,707	3	35	0	98
10-Sep	2	846	7	1,406	1	5,708	3	38	0	98
11-Sep	0	846	6	1,412	0	5,708	5	43	2	100
12-Sep	1	847	3	1,415	0	5,708	7	50	0	100
13-Sep	0	847	5	1,420	1	5,709	4	54	0	100
14-Sep	1	848	3	1,423	1	5,710	11	65	0	100
15-Sep	0	848	4	1,427	0	5,710	23	88	0	100
16-Sep	0	848	4	1,431	2	5,712	18	106	0	100
17-Sep	0	848	3	1,434	1	5,713	25	131	0	100
18-Sep	0	848	9	1,443	0	5,713	25	156	0	100
19-Sep	0	848	2	1,445	1	5,714	14	170	1	101

Table 29. Climatological and hydrological observations, Kanektok River weir site, 2003.

Date	Wind (Dir/Speed)	Air Temp. (°C)	Water Temp. (°C)	Cloud Cover percent/alt	Water level	Precip. (mm)
16-Jun	NE 25-30 G50	16	10	3013000	84	0
17-Jun	NE 5-7	17	9	6013000	83	0
18-Jun	Calm	17	8	95/3000	79	0
19-Jun	NO Data				77	0
20-Jun	NF 5-7	12	8	100/800	73	Trace
21-Jun	SE 1-3	14	9	9014000	71	0.02
22-Jun	Calm	16	10	3514000	70	0
23-Jun	NE 7-10	15	9	9015000	65	0
24-Jun	NNE 7-10	14	8.5	9015000	64	0
25-Jun	NE 5-7	12	9	10014000	63	0.16
26-Jun	NE 5-7	14	8	10014000	61	0.05
27-Jun	NE 3-5	17	9	7015000	59	0
28-Jun	NE 15-20	14	8	60/Var	58	0.01
29-Jun	SE 7-10	12	8	100/800	57	0.3
30-Jun	SSE 5-7	12	8	100/800	56	0.02
1-Jul	E 5-10	11	7	10011000	61	0.62
2-Jul	SE 10-12	8	8	100/500	65	0.24
3-Jul	Calm	14	8	8512000	65	0.1
4-Jul	Calm	18.5	9.5	6013000	62	0
5-Jul	NW 1-3	14	9	10016000	60	0
6-Jul	NW 1-3	12	9	10011000	59	0
7-Jul	NW 5-7	25	10	clear	57	0
8-Jul	Calm	21.5	10	clear	54	0
9-Jul	Calm	13.5	9	1001800	52	0
10-Jul	SW 4	14	11	100/1000	51	0
11-Jul	SE 3-5	14	10	100/Var	50	0.18
12-Jul	NW 1	22	10	4015000	50	0.01
13-Jul	NW 5-7	20	10	clear	48	0
14-Jul	NW 1-3	21	12	2016000	46	0
15-Jul	Calm	19	10	8015000	45	0
16-Jul	SW 7-10	10	13	100/1000	44	0
17-Jul	NE 5-8	12	10	100/1700	43	0.05
18-Jul	NE 15-20	19	10	6015000	43	0
19-Jul	NE 3	24	10	clear	40	0
20-Jul	W 10-12	23	12	3015000	39	0
21-Jul	NW 5	13	10	10011700	38	0
22-Jul	S 7-10	19	10	9015000	37	0
23-Jul	SE 5-10	16.5	11	99/700	36	0.02

continued

Tab 29. Continued (page 2 of 3)

Date	Wind (Dir/Speed)	Air Temp. (OC)	Water Temp. (OC)	Cloud Cover percent/alt	Water level	Precip. (mm)
24-Jul	W 5	12.5	10	100/2500	38	0.02
25-Jul	NE 1-3	18.5	10	95/3000	38	0.01
26-Jul	NW 1-3	14	10	100/1600	38	0.05
27-Jul	SE 5-7	14	10	100/2000	36	Trace
28-Jul	Calm	13.5	9	100/1500	44	0.76
29-Jul	SE 3-5	17	10	60/3000	43	0
30-Jul	Calm	12	10	100/700	42	0.02
31-Jul	Calm	13.5	9	100/1900	40	0.11
1-Aug	Calm	12	10	100/1200	40	0.01
2-Aug	NW 3-5	16	10	50/Var	39	0.13
3-Aug	Calm	13	10	100/1900	37	0
4-Aug	Calm	22	10	30/3000	37	0
5-Aug	SW 1-3	22	10	10/5000	37	0
6-Aug	SE 3-5	22	11	96/2000	33	0.06
7-Aug	NE 5-7	23	12	30/Var	34	0.14
8-Aug	NE 3-5	22	12	40/5000	32	
9-Aug	NE 5-7	20	12	30/5000	32	
10-Aug	NW 5-7	19	12	100/1800	33	
11-Aug	Calm	18	12	80/5000	34	
12-Aug	Calm	13	10	95/1000	45	
13-Aug	E 7-12	14	9	100/Var	46	.26
14-Aug	Calm	15	9	100/Var	49	.44
15-Aug	NW 5-8	8.5	9	100/Var	65	.46
16-Aug	E 5	8.5	8.5	100/3000	64	.01
17-Aug	Calm	12	8	80/1800	64	1.0
18-Aug	NW 1-3	13	8.5	90/2000	64	.05
19-Aug	SE 1-2	12	8	95/Var	64	.20
20-Aug	NW 7-10	10	8	98/1000	70	.32
21-Aug	NW 5-7	13	8	20/4000	67	0
22-Aug	NW 1-3	16	9	20/4000	64	0
23-Aug	Calm	12	8	100/700	62	Trace
24-Aug	SE 1-3	13	9	100/1000	62	.05
25-Aug	SE 1-3	13	8.5	100/2000	65	.32
26-Aug	Calm	14	9	99/2000	63	.05
27-Aug	SE 5-7	16	8	70/Var	62	.15
28-Aug	NE 1-3	17	8.5	10/Scattered	60	0
29-Aug	Calm	15	8.5	95/4000	57	.03
30-Aug	Calm	13.5	9	100/Var	58	.24
31-Aug	Calm	16	9	100/Var	58	.07

continued

Tab 29. Continued (page 3 of 3)

Datea	Wind (Dir/Speed)	Air Temp. (0C)	Water Temp. (0C)	Cloud Cover percent/alt	Water level	Precip. (mm)
1-Sep	W 3-5	10	8.5	10/Var	56	0
2-Sep	NW 3-5	8	8	75/Var	55	.02
3-Sep	Calm	13	8	100/1500	54	2.6
4-Sep	E 5	14	8	20/Scattered	64	6.7
5-Sep	NW 3-5	12	8	60/Var	62	.13
6-Sep	Calm	12	8	C A W	58	.01
7-Sep	Calm	17	7.5	20/Var	56	0
8-Sep	NE 1-3	16	7	40/Var	55	Trace
9-Sep	NW 1-2	16	7	40/1500	54	0
10-Sep	NW 1-3	11	7	C A W	53	Trace
11-Sep	NW 1	10	7	100/700	51	Trace
12-Sep	Calm	12	7.5	75/Var	48	.11
13-Sep	Calm	9	7	100/500	49	.02
14-Sep	NW 1-3	5	6	clear	49	.04
15-Sep	S 3-5	12	6	clear	47	0
16-Sep	Calm	12	6	clear	46	0
17-Sep	Calm	12	5	clear	46	0
18-Sep	Calm	12	5	clear	45	0
19-Sep	SW 8-12	4.5	4.5	50/7000	44	0
20-Sep	Calm	5	4	clear	39	0
21-Sep	NW 1-2	6	4	clear	35	0
22-Sep	SE 5-8	10	3	45/7000	33	0
23-Sep	NE 5-7	11	4	70/1500	33	0
24-Sep	Calm	5	4	30/1500	33	0

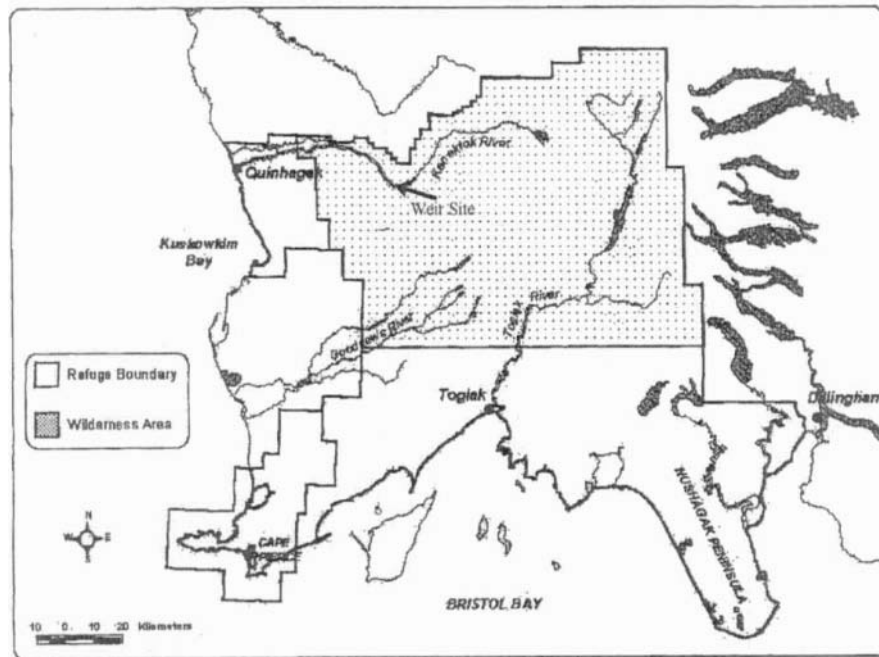


Figure 1. Kanektok River drainage and weir location.



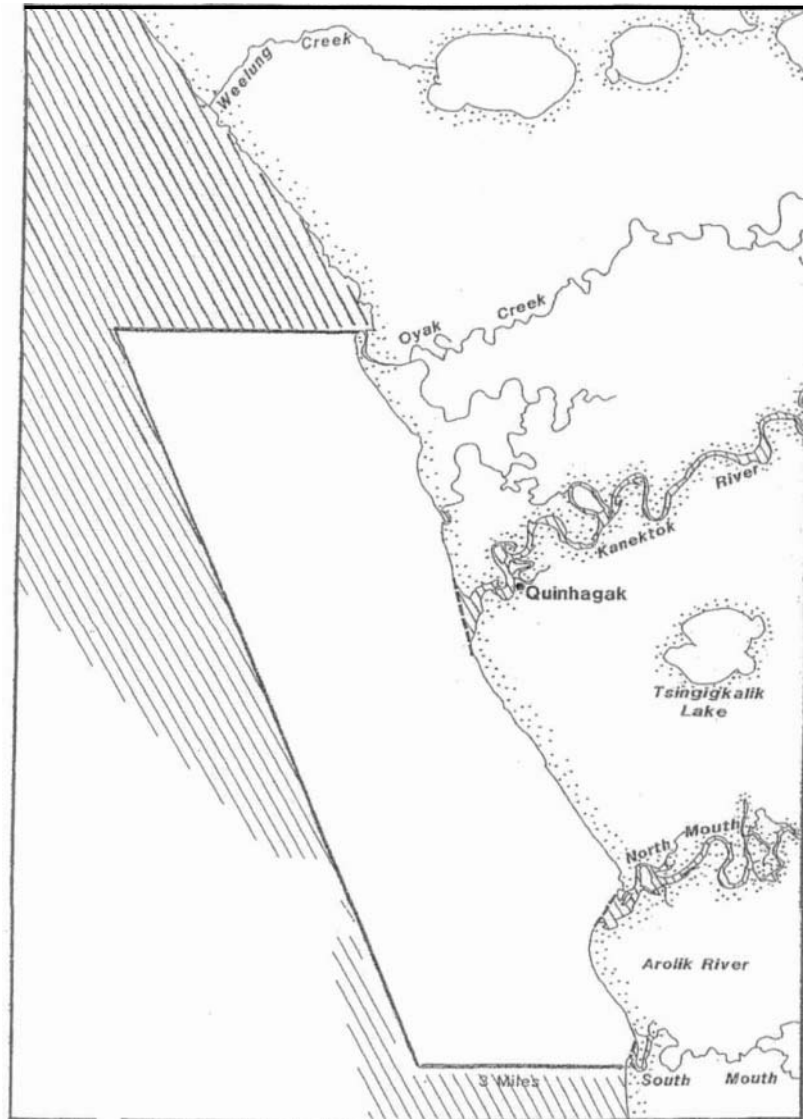


Figure 2. Map of the District W-4 commercial fishery. Striped areas are closed to commercial fishing. North is at the top of the map.